# Dental Abstracts

*a selection of world dental literature*

AMERICAN DENTAL ASSOCIATION

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JUNE 1960

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SECTIONS



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*3. To supply enough data in each abstract and digest that the reader may determine whether he wishes to refer to the original article for more complete information.*

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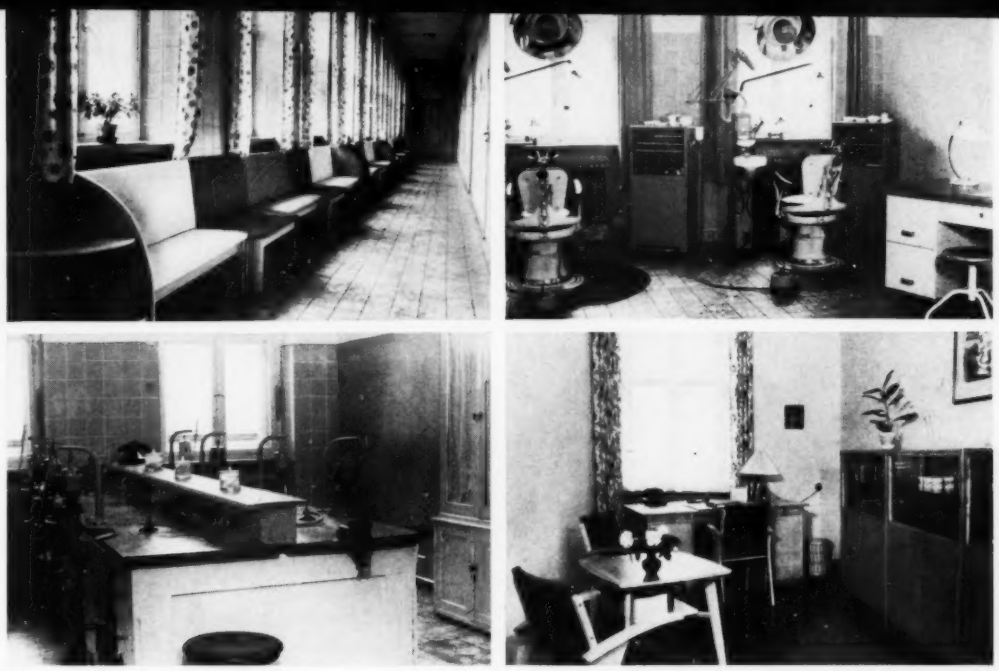


*Orthodontic clinic at University of Rostock. Waiting room, operating room, and laboratory, office of the chief orthodontist*

Education

**The new orthodontic clinic of the Dental School of the University of Rostock**

Ursula Heckmann. *Deut.Stomat.* 9:813-816 Oct. 1959

On September 1, 1959, the new orthodontic clinic of the Dental School of the University of Rostock was opened in a modern building which was erected by using grants provided by the Ministry of Health of the East German Democratic Republic.

The clinic was designed not only for training dental students in orthodontics but also for making orthodontic treatment available to the preschool and school children of the city and its neighboring communities. It consists of four large operating rooms, one spacious laboratory, one smaller laboratory for casting and polishing, one office of the chief orthodontist, one study for six orthodontists including a large sitting room, and one general waiting room.

In the four operating rooms are seven dental chairs facilitating the training of dental students in orthodontics under continuous supervision by the chief orthodontist and his six assistants, and the rendering of orthodontic service to the children. The walls, furniture and equipment present a color scheme which is pleasant to the eyes of patients and operators.

The laboratories are situated near the operating rooms, giving the orthodontists and dental students the opportunity to be in constant contact with the "master" dental technician and the five dental technicians and two student technicians.

The units used for taking roentgenograms, teleroentgenograms and cephalometric measurements are detached from the orthodontic clinic because they are used also by other departments of the dental school.

The waiting room, bright and cheerful, has the form of a long corridor, and a long row of chairs for adults and children is arranged along the windows. The opposite wall presents a series

of colorful pictures of figures from German fairy tales which counteract the patient's feelings of apprehension, uncertainty and fear.

The new orthodontic clinic is intended not only to serve as a modern educational institute but also as a center for dental research in which various scientific projects will be carried out.

*Strempelstrasse 13, Rostock, Germany*

### Education and certification programs for dental assistants

B. F. Miller. *D.Asst.* 28:7:11-16 Nov.-Dec. 1959.

Between 1950 and 1955, the number of dental assistants employed in the United States increased from 55,200 to 62,000. The percentage of dentists using dental assistants rose from 64 to nearly 70 per cent. The number of all dental auxiliary personnel rose from 62,000 in 1950 to 82,500 in 1955. For the first time in the history of the dental profession in the United States, the total number of dental auxiliary personnel exceeds the total number of practicing dentists. Between 1950 and 1955 the mean salaries paid by dentists to dental assistants increased from $1,788 to $2,421, representing a gain of about 35 per cent.

The house of delegates of the American Dental Assistants Association first approved educational standards for dental assisting programs in 1939; the 104-hour study course was approved in 1947; in 1953 the house approved procedures to approve dental assisting schools which had been developed by the association's education committee; also in 1953, the American Dental Assistants Association approved the curriculum for a 1,000-hour study program. The American Dental Assistants Association incorporated its certification board in 1948; up to 1959 the board has certified 6,390 dental assistants, and has worked to improve the quality and content of the certification examinations and to raise the standards of dental assisting on a nationwide basis. In 1958 the certification board retained the services of a professional testing agency to improve its examination program.

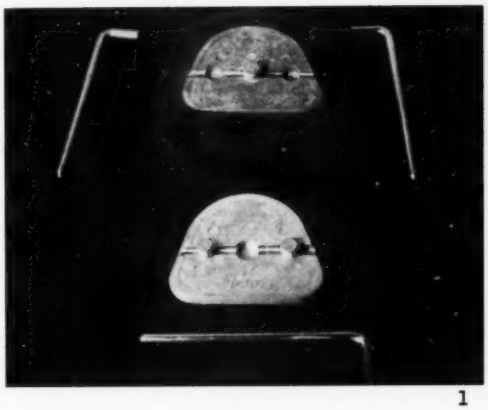
In recent years the dentist's concept of the duties and assignments of the dental assistant has changed. Although many dental assistants still serve mainly as secretaries and receptionists, it is being realized that the dental assistant can help the dentist at the chair, assist him in the operatory and laboratory, take and process roentgenograms, follow specific procedures for handling appointment schedules and recall systems, order dental supplies, and greet patients.

With population soaring, there will be a continuing need for more dental auxiliary personnel, and particularly for trained dental assistants.

The American Dental Association's Council on Dental Education is discussing with the certification board of the American Dental Assistants Association a draft of standards for a national certifying board for dental assistants which might be submitted to the House of Delegates of the American Dental Association. The Council on Dental Education is proposing only the principles, pattern and the basic philosophy on which a national certification program could be administered. Such a program would be operated completely and independently by the certification board of the American Dental Assistants Association.

In 1960 and 1961 the House of Delegates of the American Dental Association, for the first time, will be studying both education and certification standards for dental assistants. The day may be near when all the dental auxiliary groups will have education and certification programs under the direct purview of the Council on Dental Education and with full recognition of the profession through the American Dental Association. New dimensions in the practice of dental assisting, in educational opportunity, in new and increased stature for certified dental assistants, seem a certain outcome of many years of purposeful activity between the two associations.

*Council on Dental Education, 222 East Superior Street, Chicago 11, Ill.*



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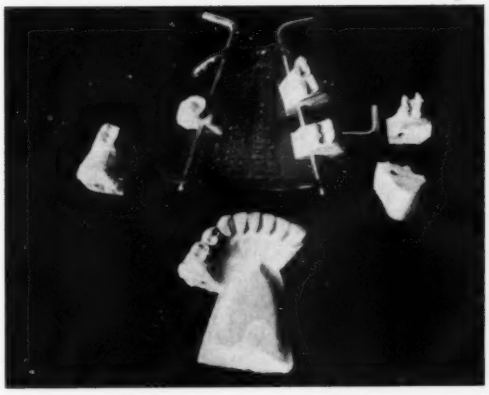


*1 Top: Modified mounting base and tapered locking pins. Bottom: Part of Hanau split remounting plate and locking pin of plate*

*2 Top: Cast in mounting base, showing saw cuts. Bottom: Serrated base, locking pins in place*

*3 Individual dies secured in mounting base*

Operative dentistry

## Modified mounting base for crown and bridgework in dentistry

Charles E. Lane and James L. Childree.
*M.Technicians Bul.* 10:243-246
Nov.-Dec. 1959

A modified mounting base developed by James L. Childree provides the following advantages: superior accuracy, secure locking of individual dies, a single operation for posterior bridgework in pouring dies and casts, separate mounting of dies for easy access, and over-all simplicity of use. Designed primarily for use on posterior crown, bridge and multiple inlay construction, the base also is satisfactory for anterior crown and bridge construction when the dowel pin technic is incorporated.

The modified mounting case (Fig. 1, top) consists of six parts. A one-piece serrated base with grooved, slightly tapered flanges is processed in acrylic resin. Into the tapered flanges, two metal bushings are processed on either side. The bushings (not visible) are perforated to accept a stainless steel locking pin on either side of the base. The pins, tapered for easy removal, are placed horizontally through the metal bushings from the front to the back. Half of a Hanau split mounting plate is incorporated in the underside of the serrated base. This feature allows ease of articulation of the serrated base to a straight line or adjustable articulator, and accurate repositioning of the base on the articulator. The serrated bottom and grooved, tapered flanges provide a precise fit for all dies. The locking pins hold these dies securely in position.

When the modified base is used, the impression is prepared by trimming the anterior roll or flange of the impression material to expose the flange

of the tray. The anterior flange of the tray is permitted to rest against the locking pins that have been placed in their metal bushings. If desired, stainless steel matrixes may be placed in the impression as die separators, thus eliminating most of the sawing.

A die stone (such as Duroc) is poured into the tooth portion of the impression. The base of the cast is poured into the modified mounting base, with locking pins in place, using artificial stone such as French's. The locking pins and serrated base should not be lubricated. While the stone is soft, the impression side of the tray is placed in it. After the stone has set, the impression is removed with a plaster knife, the locking pins pulled out and the case removed from the base. With a no. 3 jeweler's fine-tooth saw, cuts are made in those areas where removable dies are desired, and through the base of the cast on the lingual side of the ridge to facilitate removal of individual dies (Fig. 2).

After all cuts are made, the parts can be reassembled precisely from the indentations made on the underside of the stone by the serrated base. The parts are held in their original position by sliding the tapered locking pins through their bushings (Fig. 3). These pins may be lubricated in order to facilitate their placement and removal.

*Army Medical Service School, Fort Sam Houston, Texas*

### A water cooling device for high-speed techniques

J. L. Townend. *Brit.D.J.* 107:355-356 Dec. 1, 1959

The nucleus of a new water cooling device for use with high-speed cutting technics is a Lucas electric screenwasher Model 2SJ. With the associated control equipment, the unit delivers a positive fine jet of water to the cutting instrument.

The unit consists of a small centrifugal water pump submerged in the glass water container and driven, via a shaft, by a small D.C. electric motor built on top of the container lid. The screenwasher requires 12 volts D.C. Switching of the screenwasher is accomplished by the push-button switch provided with the unit or by a micro switch which may be situated at any position convenient to the operator. If the switch is fastened to the dental chair in such a position that it can be operated by slight pressure from the leg, easy control of the unit is maintained. Once the unit is switched on, there is virtually no time lag before the water jet commences, as the water is forced rapidly along the supply tube to the nozzle on the handpiece. The supply tube should be kept as short as possible to prevent a time lag. The water jet ceases immediately on release of the electrical switch.

The unit has been in use for more than six months and has proved to be reliable and efficient in providing water cooling at low cost for high-speed handpieces.

*122 Trinity Street, Huddersfield, Yorkshire, England*

### A simple device to increase patient comfort during high speed procedures

Robert L. Heinze. *New York State D.J.* 25:424 Nov. 1959

Although the air-driven, water-spray turbine is used extensively for the preparation of teeth, authors have failed to comment on the discomfort to the patient when it is used in preparing the labial surface of any of the upper six anterior teeth. The escape of air and spray into the nostrils and face frequently is startling to the patient. The force usually is sufficient to overcome the pressure of ordinary exhalation.

The solution is simple. Since a dental mirror usually is not necessary when the dentist operates on the labial surfaces of upper anterior teeth, the dentist can use his left hand to hold about a third of a sheet of wax under the nose of the patient. The sheet of wax can serve both as a deflector of air and spray and as a lip retractor. The wax may be notched or curved at one edge to fit the labial contour more closely.

*One Hanson Place, Brooklyn 17, N.Y.*

Case reports

## Facial hemihyperplasia

Viktor Sinkovits. *Stoma* 12:188-199 Nov. 1959

Facial hemihyperplasia (facial hemihypertrophy, hemiacromegaly or partial gingantism of the face) was first described in the literature in the 1830's. In 1937, after reviewing the pertinent dental and medical literature, Gruber and Kuss found only six case reports. H. Euler, in 1939, mentioned three additional case reports, and Kurt Thoma (1944), four. In 1948, however, M. Rushton reviewed 19 additional case reports. The condition, hypertrophy of half of the face, appears to have been observed rarely in dental practice.

A 21 year old male gypsy with facial hemihyperplasia was observed at the Dental Clinic of the University of Debrecen, Hungary. According to the patient's parents, the facial asymmetry had been noticed almost immediately after birth. A few years ago an unsuccessful attempt had been made to reduce the facial hypertrophy surgically.

The facial asymmetry, symmetry of the cranium and fingers, and asymmetry of the lips are shown in Figure 1. Asymmetry prevailed in both dental arches. Most teeth in the hypertrophic halves of the jaws were enlarged but not the central incisors. The original size of the lateral incisors could not be determined in a reliable manner because of a profound attrition. The lower cuspids, bicuspids and the only erupted molar displayed larger mesiodistal and buccodistal crown diameters than their opposite teeth. All teeth were free of carious lesions.

Roentgenographic examinations revealed the presence of an impacted upper right molar that was normal in form and size. The teeth in the hypertrophic halves of the jaws had extremely short and blunt roots. On the left side, the intercuspation was normal; on the right side, an open bite had developed, probably caused by the action of the enlarged tongue. The hemihyperplasia affected also the right half of the tongue and the papillae. The mucous membrane on the affected

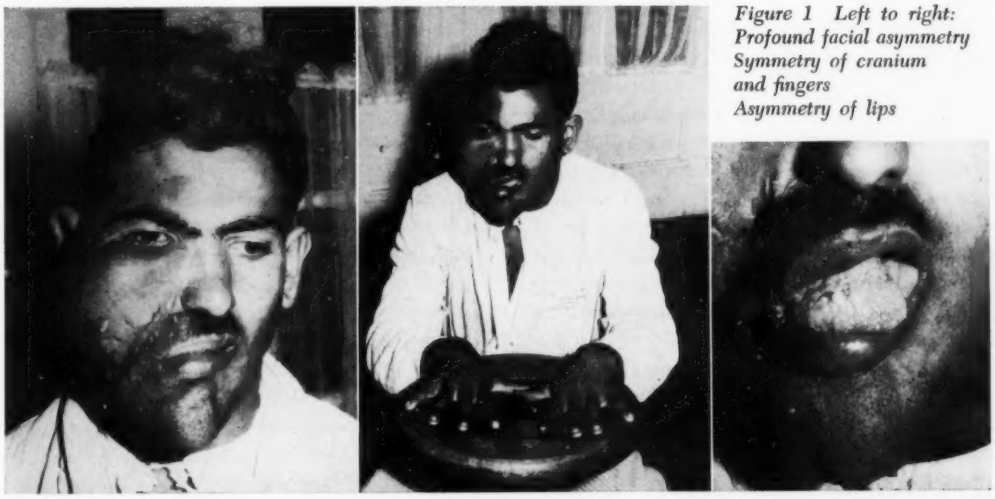


*Figure 1 Left to right: Profound facial asymmetry Symmetry of cranium and fingers Asymmetry of lips*

*Figure 2 Roentgenographic representation of the unilateral hypertrophy in both jaws*

side showed a velvetlike appearance. In the skin of the right side of the face a venous hemangioma developed.

Etiologically, early neurovascular disturbances can be considered as being the causative factors. There was no evidence of endocrinic disorders. It has been suggested that mechanical factors acting on the fetus may be the causative factors, but a growth-promoting role of mechanical stress has never been proved.

In this patient, certain etiologic clues existed which made it possible to determine in what period of life the hypertrophic growth became activated, because certain teeth were affected but not all. Rushton stated that only the teeth located within the hypertrophic growth exhibit gigantism. The normal size of the central incisors seems to contradict the assumption that the chronology of tooth development is the decisive factor in the presence or absence of excessive size of the teeth; the possibility of specific divergences from the normal chronology should be taken into consideration. Indicative of such divergences in growth and development of the jaws and teeth seems to be the premature loss of the deciduous teeth and the early eruption of the permanent teeth in the affected jaw regions.

In the roentgenograms, the root surfaces appeared to be smooth. In facial hemihyperplasia, the excessive size of the tooth crowns and the shortness and thickness of the roots seem to be the most important intraoral symptoms.

*Stomatologiae Klinika, Debrecen, Hungary*

## Osteitis of the jaw and trigeminal neuralgia

D. Gross. *Zahnärztl.Praxis* 10:199-200 Sept. 1, 1959

Frequently, generalized osteitis fibrosa of the jaw is associated with trigeminal neuralgia. In such instances oral surgical intervention involving the gasserian ganglion or the root and branches of the fifth cranial nerve are contraindicated.

A 34 year old man suffered for five years from a trigeminal neuralgia associated with a roentgenographically determined generalized osteitis fibrosa of the lower jaw.

Because of the severity and the unpredictability of the paroxysmal pain, the use of analgesics proved of little value. Daily administration of vitamin $B_{12}$ and vitamin B complex, 1,000 micrograms injected intramuscularly, brought temporary relief.

Neurohistologic examinations of specimens taken from the lower jaw revealed extensive accumulation and infiltration of round cells, especially at the stratum papillae and the course of the branches of the fifth cranial nerve. The nerve fibers, obviously of cerebrospinal origin, were pathologically changed. There were various nodose swellings and a comparatively large tumorous enlargement at the site where the lower right third molar had been extracted six years previously.

After nerve blocking, the supraorbital, infraorbital and mental branches of the fifth cranial nerve were divided by small incisions, and the posterior root of the nerve was compressed intracranially (Dandy's operation).

Eight months after surgery, the patient stated: "During the first month there was no improvement, there was unilateral pain but the attacks were less frequent. The ophthalmic nerve and the secretory nerves seemed also affected causing lachrymation, increased nasal secretion and sali-

vation. During the second month, pain sensation decreased, and later there was neither pain nor discomfort."

This case report as well as others obtained from the oral surgical department of the Dental College of the University of München, lead to the following conclusions:

Generalized osteitis fibrosa of the jaws, associated with trigeminal neuralgia, can be caused by: (1) dentogenetic factors such as disturbances within the pulp chamber, formation of denticles and transmission of stimuli to the dentin; (2) neoplastic factors such as cysts, adamantinomas and odontomas; (3) periodontal factors such as chronic periapical osteitis, cementicles and hypercementosis; (4) developmental factors such as tooth impaction, root anomaly, failure of tooth germs to form deciduous and permanent teeth (anodontia and microdontia) and other anomalies in shape and number of teeth; (5) acquired factors such as postanesthetic trauma, osteomyelitis, necrosis, postextraction complications, presence of foreign bodies, occurrence of jaw fractures, and sclerosis of the jaw.

Generalized osteitis fibrosa of the jaw, associated with trigeminal neuralgia, is a comparatively rare disease which should not be confused with sequelae of chronic pulpitis, root canal treatment or postoperative trauma of the pulp.

*Goethestrasse 70, München, Germany*

### Recurrent attacks of glossitis

*J.A.M.A.* 171:500-501 Sept. 26, 1959

*Q.*—A 25 year old woman has recurrent attacks of glossitis associated with pain and burning sensations. The dental examination reveals nothing abnormal. Smears of denuded areas are negative. It is believed that this is a form of allergy. Avoidance of coffee and tomatoes results in remission, but there has been recurrence.

*A.*—There are many types and causes of glossitis. The description is most suggestive of Moeller's glossitis. As a rule, in this condition, there are intensely red, well-defined, irregular patches in which the filiform papillae are thinned or absent and the fungiform papillae are swollen. Exfoliation of the superficial layer of the epidermis occurs in these patches. The condition also is characterized by burning, pain, and sensitivity to irritants. The condition is chronic but is characterized by remissions and exacerbations. The lesions may remain for long periods of time or regress and be replaced by new patches. The cause is unknown. Treatment is unsatisfactory, and the prognosis is poor.

*535 North Dearborn Street, Chicago 10, Ill.*

### Scotch-on-the-rocks

W. Skyrme Rees. *Brit.M.J. No.* 5152:636 Oct. 3, 1959

There is a method of drinking Scotch whisky known as "Scotch-on-the-rocks." Neat whisky is poured on ice cubes and sipped as an apéritif.

A man who had been drinking in this manner for 18 months but who did not smoke tobacco, had developed leukoplakic glossitis. The typical white patches on the sides of the tongue, and all his symptoms, disappeared within two weeks after following the author's advice to put more water in his drinks. His tongue now is normal.

*Bangor, Wales*

### Accidental swallowing of a partial denture and its spontaneous passage through the gastrointestinal tracts

Wesley Furste and Paul Watkins. *Am.Surgeon* 25:486-488 July 1959

Numerous types of foreign bodies have either accidentally or purposely been swallowed by patients, and have been eliminated spontaneously through the gastrointestinal tract.

A 26 year old woman, treated at the dental clinic of the Columbus State School of the Ohio State University, accidentally swallowed a partial denture. After the accident, the patient did not experience pain, nausea or vomiting. Two days later, surgical consultation was requested.

At the time of the initial surgical examination, serial roentgenograms indicated that the denture had remained in the left upper abdominal quadrant.

The patient was admitted to the Columbus State School Hospital for observation. A Levin tube was inserted into the stomach, and was at-

tached to a suction appliance. No visible blood was aspirated through the tube. During the next few days the tube was removed and the position of the swallowed denture was determined by daily roentgenograms. The patient was allowed to eat, and a series of enemas was administered. There were no signs of intestinal obstruction, bowel perforation or peritonitis. Three days later, the denture was passed spontaneously in a mass of feces which did not contain gross amounts of blood.

During the entire period (seven days), the patient did not have any permanent adverse effects from swallowing this comparatively large foreign body.

Surgical intervention had been considered primarily because of the projecting sharp points of the denture and not because of the size of the object. Fear was entertained that these sharp points might penetrate the gastrointestinal tract at the pyloric or ileocecal valves or at the duodenal or duodenojejunal curvatures. However, the conservative treatment was successful in obtaining a gradual elimination through the gastrointestinal tract.

*327 East State Street, Columbus, Ohio*

## South American blastomycosis with involvement of the oral mucosa: report of case

T. Wegmann and H. U. Zollinger.
*Schweiz.med.Wschr.* 89:1151-1153 Oct. 31, 1959

South American blastomycosis is a highly destructive but usually curable infectious disease that results from invasion of the nasopharynx or the oral cavity by *Blastomyces brasiliensis.*

Although the disease seldom occurs outside South America, a patient with asymptomatic involvement of the oral mucosa (tuberculoid granuloma) and the cervical lymph nodes, associated with South American blastomycosis, was observed at the Cantonal Hospital in St. Gallen, Switzerland.

As in several cases reported, the portal of entry of the exogenous fungus was the oral cavity, probably predisposed by a complicated extraction of the lower right second and third molars performed about one year before admission. One month prior to the examination at the hospital, a tuberculoid granuloma had developed on the mucous membrane covering the lower jaw. The destructive swelling and ulceration extended later to the cervical nodes.

During previous dental examinations, the primary lesion appeared to be inconspicuous.

At the hospital, no clinical diagnosis could be reached on the basis of pathologic findings of pulmonary changes alone. Microscopic examination of exudates, pus and biopsy specimens from the involved oral tissues and lymph nodes revealed the presence of multiple budding cells of *B. brasiliensis,* characteristic for South American blastomycosis. These multiple budding cells also were found in fungi cultures on blood agar incubated at 37°C.

Working as a cabinet maker, the patient had been exposed to dust from tropical woods for many years, first in São Paulo, Brazil, and later in St. Gallen, Switzerland.

The infection responded swiftly to sulfonamide and hydroxystilbamidine treatment.

*Cantonal Hospital, St. Gallen, Switzerland*

## Patchy senile elastoma of the lip resembling leukoplakia

G. H. Findlay. *South African M.J.* 33:872 Oct. 17, 1959

A 49 year old spinster had an opalescent spot on the external vermilion surface of the lower lip. There was no atrophy or epithelial change. Histologically, the lesion consisted of an area of senile elastosis without any epidermal or other alteration. It was interesting to note that whitening of the lip resulted from elastosis alone, that the lesion could be a papular elastoma, and that no change in the epithelium and no leukoplakia had occurred.

Lip elastosis, as a precancerous manifestation, is associated with loss of substance, chronic inflammation and a readily damaged horny layer, thick, thin or scaly. Whitening or leukoplakia then is epithelial. Whitening on the lip or vulva usually comes from a thick and sodden horny layer, a thick malpighian layer, or both.

*Department of Medicine, University of Pretoria, Pretoria, Union of South Africa*

Periodontics

## Periodontometric examinations of tooth mobility caused by periodontal disease

Jacques Rotzler. *Schweiz.Mschr.Zahnhk.* 69:885-907 Oct. 1959

The customary clinical examination to estimate the degree of tooth mobility present depends mainly on the periodontist's judgment of further tooth movements when forces and stresses are applied to the involved teeth. Such an examination, therefore, is not a precise diagnostic procedure because of the probably prejudiced expectations of the examiner. A more accurate and objective method is required to obtain periodontometric measurements.

Teeth which have become loose because of periodontal disturbances can be saved only by total immobilization. Adequate immobilization can be obtained through the insertion of fixed or removable splints. Such stabilizing devices, however, immobilize the involved teeth only if their effect extends over all four possible directions of tooth mobility.

Periodontometric examination, using a vibration technic, reveals whether the tooth mobility is related to the amplitude of vibration. If the tooth is firm and the periodontal membrane elastic, there would be recognizable frequencies at which the tooth would resonate and could be maintained in vibration with comparatively little amount of energy. The optimum differentiation between teeth with different degrees of mobility will be obtained at 1,000 cycles.

It was determined that in instances in which the fixed splint extends in a linear direction only, additional contralateral immobilization must be obtained by inserting a removable lingual or palatal bar which should be as unelastic as possible.

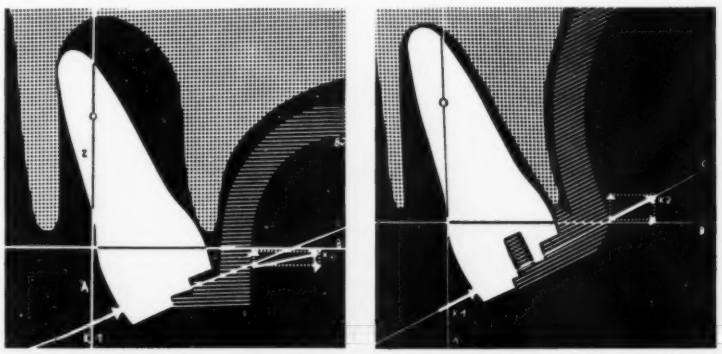


*Figure 1 Left: Inadequate splinting, incomplete stabilization. Right: Adequate splinting, complete stabilization. Z = tooth in socket, B = splint, O = center of rotation, A = axis of the immobilized tooth, C = axis of the nonstabilized tooth, $K^1$ = force exerted on the tooth, $K^2$ = force exerted on the splint*

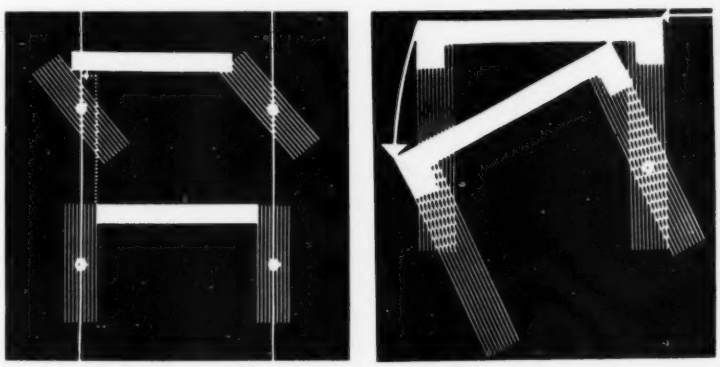


*Figure 2 Left: Inadequate splinting revealed by periodontometric examination; forces and stresses produce additional tooth mobility. Right: Adequate splinting, demonstrated by periodontometric examination; forces and stresses are transmitted without producing additional tooth mobility*

Such a procedure is indicated if the periodontometric instrument reveals the presence of great tooth mobility, usually found on the incisal edge at right angles to the long axis of the tooth. Periodontometric readings will gradually decline when the instrument is moved toward the neck of the tooth.

The difference between adequate and inadequate splinting, revealed by periodontometric measurements, is shown in the diagrams. Correct splinting methods may bring about an 84 per cent reduction in tooth mobility.

By a test of the periodontometric method, a statistically significant difference was found between the meter readings and the tooth mobility as judged clinically.

*Jacob Burckhardt Strasse 7, Basel, Switzerland*

### Cementum apposition in periodontally diseased teeth

Beat Hürzeler and H. A. Zander. *Helv.odont.acta* 3:1-3 April 1959

The thickness of cementum on 83 teeth from subjects of various age groups with periodontal disease was measured.

In each age group the cementum was less thick on the roots of teeth with periodontal disease than on the roots of healthy teeth from subjects of the same age group. Whereas for healthy teeth cementum apposition seems to increase with age in a straight-line relationship, for teeth that are periodontally diseased there is a leveling off of cementum apposition with age.

*Eastman Dental Dispensary, Rochester 3, N.Y.*

### Effect of mechanical stimulation on flow of tissue fluid through gingival pocket epithelium

Niels Brill and Bo Krasse. *Acta odont. scandinav.* 17:115-130 Sept. 1959

An investigation was undertaken to determine whether brief irritation of healthy marginal gingiva increases the rate of flow of tissue fluid into gingival pockets. Seven experiments were conducted on an eight month old dog with healthy gingival tissues and fully erupted permanent teeth. In each experiment the dog was placed under general anesthesia and the soft tissues surrounding the teeth were stimulated by one of the following methods: (1) simulated chewing; (2) mechanical stimulation of the pocket epithelium, or the crest of the marginal gingiva, or the vestibular surface of the marginal gingiva, and (3) gingival massage, by brushing according to the Stillman method, the Charters method, or by a modified method. The effect of the various kinds of stimulation was judged from the amount of fluorescein sodium recovered from gingival pockets in strips of filter paper after intravenous injection of the test substance, fluorescein sodium. Previous to and immediately after each kind of stimulation, strips were inserted into the gingival pockets and left there for three minutes to collect fluid from the pockets. If any difference between a series of recordings before and after stimulation could be registered, it was held to be a result of the stimulation.

The results show that brief mechanical stimulation of clinically healthy pockets provokes an increased flow of tissue fluid through pocket epithelium even where the stimulation is applied externally to the pockets. Another finding is that this increased flow seems to return to the original rate within ten minutes. These effects cannot be accounted for readily, but different explanations are suggested. When a vascular bed is mechanically stimulated, one reaction of arterioles is a dilatation accompanied by an increased pressure. At the same time, an increased permeability of the vessels may occur allowing plasma to escape more freely. The connective tissue interposed between vessels and epithelium also may undergo changes caused by mechanical stimulation. Stimulation also may influence an epithelial barrier.

Modern diets are soft and lack the stimulating and cleansing effect of the hard diets of primitive man. This lack of natural mechanical action must be replaced by artificial measures, if gingival health is to be preserved. The main beneficial effect attributed to massage is that it restores circulation in inflamed structures, with the effect that acids and injurious end products of inflammation are drained off and fresh oxygen and cell nutrients are brought in. Thus, tissue metabolism is improved.

The present investigation suggests one possible

explanation of a beneficial effect of toothbrushing. Waerhaug (1952) stated that if a pocket is irritated to such a degree that an exudate with a large content of polymorphonuclear leukocytes is formed, this exudate removes particles from the pocket. It is highly probable that a stream of fluid provoked by toothbrushing also can remove particles from pockets; if so, a fundamental rationale for gingival massage is established.

*Royal Dental College, 4 Universitetsparken, Copenhagen Ø, Denmark*

### Reattachment

W. G. Cross. *Rev.A.odont.Argentina* 47:219-225 June 1959

Reattachment of periodontal tissue unquestionably can be secured in favorable instances if certain technical requirements are met. These include preliminary curettage, occlusal correction, and, when necessary, immobilization of the teeth to be treated. The reattachment procedure should not be carried out until two weeks after these preliminary measures have been completed. Its purpose is the complete removal of all deposits of calculus so that inflammation can be minimized. Ramfjord (1951) pointed out that the less the inflammation, the greater the possibility for attachment of connective tissue.

The operation can be carried out either by blind curettage or by creating and retracting a flap so that the surgeon can visualize the operative field. The need for a flap increases in proportion to the difficulty of obtaining access to the areas of the root surfaces to be treated. When a flap is made, the soft wall of the periodontal pocket is curetted first to remove the epithelium. The curettage, which can be begun with any curets or instrument of adequate size (those with tungsten carbide tips are especially useful), is intended to remove the greater part of the cementum, the epithelium of the pocket, the epithelial adhesions, and the granulation tissue. Enough of the cementum must be eliminated to insure the removal of calculus from the areas of reabsorption. These requirements are a powerful argument in favor of securing visualization by the creation of a flap. In patients with deep intra-alveolar pockets with narrow bony openings, this treatment will suffice, but when the openings are wide and the loss of bone has affected various aspects of the tooth, bone grafts (especially anorganic bovine bone) can be used successfully.

After completion of the curettage, the flap is replaced and sutured with silk. A thin strip of tin is then cut to fit over the operative area and is inserted between the teeth so that the surgical cement can be placed on it and not be forced into the pocket. This protective shield and the sutures are removed a week later. During the first four postoperative days the patient is given one injection daily of a long-acting penicillin to minimize the danger of infection. The pocket should not be explored for at least six weeks.

On the basis of his experience, the author believes that these procedures will not only lead to reattachment in selected instances, but that they may also be the most effective means of saving isolated teeth which would otherwise have to be extracted.

Accurate measurement of the bottom of the pocket and a standardized roentgenographic technic permitting exact superposition of "before" and "after" roentgenograms are essential elements in evaluating the success of the treatment and the degree of reattachment. Histologic evidence is rarely obtainable, for obvious reasons, but in one of the author's cases, in which teeth that were later to be extracted were treated as described, histologic studies revealed a reattachment of the periodontal membrane.

*79 Harley Street, London W.C. 1, England*


**Growth and transformation of the temporomandibular joint in an orthopedically treated case of Pierre Robin's syndrome: a histologic study**

Louis J. Baume, Karl Häupl and Rudolf Stellmach. *Am.J.Orthodont.* 45:901-916 Dec. 1959

This is believed to be the first histologic report of an orthodontically induced transformation of the temporomandibular joint of a child.

An infant affected with Pierre Robin's syndrome, involving congenital micrognathia, was treated orthodontically at the age of two months. After five months of therapy, normal jaw relations were established. The child died of other causes at the age of nine months. Histologic analysis of the temporomandibular joint revealed the following:

1. The temporal structures of the joint gave evidence of an orthodontically induced transformation in the sense of a forward displacement of the fossae by coordinated processes of bone apposition and bone resorption.

2. There was absence of traumatic injuries of the capsular structures.

3. The condyle showed growth activity in the vertical and horizontal directions exceeding the normal rate.

4. These histologic peculiarities were identical to those described by Breitner, Häupl and Hoffer in similarly treated experimental monkeys.

These observations led to the following conclusions:

1. The scope of orthodontic treatment is not necessarily limited to transformations of the periodontal structures of the jaws. Even parts of the temporal bone may be influenced by orthodontic therapy.

2. Roentgenographic analysis does not reveal the entire picture of orthodontically induced growth changes. Animal experiments remain an important aid for the bio-assay of orthodontic therapy.

3. Häupl's functional orthodontic method takes the best advantage of the morphogenetic property of functional stimuli, although any other appliance system may produce similar effects.

*Medical Academy of Düsseldorf, Düsseldorf, West Germany*

**The relationship of dentofacial growth and skeletal maturation to malocclusion**

Leonard J. Seide. *Am.J.Orthodont.* 45:801-816 Nov. 1959

To appraise the result of corrected malocclusion, two treated patients were evaluated on the basis of degree of skeletal maturation and dentofacial growth and development. Growth and development are biologic complexes; they constitute the least controllable factor in orthodontics, and they play perhaps the most significant role in the correction of malocclusion.

The hand-wrist roentgenogram was the criterion of assessment for skeletal maturation of the two patients. Skeletal age standards as set forth in Greulich and Pyle's *Radiographic Atlas of Skeletal Development of the Hand and Wrist* (1959) were used. Lateral cephalometric tracings were employed to analyze dentofacial growth. A table of means was compiled from the various analyses in the literature; the skeletal planes and landmarks which were pertinent to dentofacial growth and development, and which would not be influenced by treatment, were used.

A correlation of the effects of skeletal maturation on dentofacial growth and development was attempted.

Case reports of varied malocclusions with differences in skeletal maturation at the time of original examination were investigated, leading to the following conclusions:

1. The assessment of skeletal maturation is a positive factor in dentofacial growth and development, and cannot be separated from dentofacial growth.

2. The medical history, genetic background, nutritional history and endocrinologic status of the patient influence both skeletal maturation and

dentofacial growth and development, and should be considered in any attempt to correct a malocclusion.

3. Ultimately, the prognosis for correction of malocclusion is directly related to the significant deviations from the means of both skeletal maturation and dentofacial growth, and both should be considered prior to orthodontic intervention.

*5601 Riverdale Avenue, Riverdale, N.Y.*

### Proposed changes in orthodontic nomenclature

Jozef Korczak. *Czas.stomat.* 12:619-622 Sept. 1959

In a recent session of the Committee on Nomenclature of the Polish Dental Association, which took place at the Dental School of the University of Szczecin (Stettin), the following changes in orthodontic terminology were proposed by the author and accepted by the committee:

1. The term "underdevelopment of the jaw" should be replaced by the more descriptive term "micrognathia" which represents more accurately the condition of abnormal smallness of the lower jaw producing a recession of the chin.

2. The term "overdevelopment" or "extreme development of the jaw" should be replaced by the term "macrognathia" which describes a prognathous condition (gnathic index above 103).

3. The term "open bite" should be replaced by the etiologically more descriptive term "incomplete bite" because the condition in which the upper and lower incisors do not occlude usually is caused by disturbances in growth and development.

4. The term "lateral displacement of the mandible" should be replaced by the more descriptive term "mandibular deviation" to which in orthodontic diagnosis the total number of variables may be added.

The author makes no claim that with his proposed changes in nomenclature all the problems of orthodontic terminology are solved; he hopes, however, that these terms, if generally accepted, will contribute to simplifying the national and international nomenclature.

*Ulica Pieprzowa 8-12, Łódź, Poland*

### Serial tooth extraction, an orthodontic procedure

Gottfried Schmuth. *Med.Klin.* 54:1833 Oct. 2, 1959

In orthodontics, serial tooth extraction is concerned with limiting growth and treatment. Its main purpose is guiding and controlling the eruption of deciduous and permanent teeth in the dental arches of patients in whom there is no hope of obtaining the maximum size and proportion of these teeth. Serial tooth extraction is designed to anticipate and prevent the development of deformities in the permanent dentition, and usually is applied to a predetermined series of deciduous and permanent teeth.

Consideration of balance and symmetry of the face is significant in orthodontic diagnosis. It is possible, however, that the straight profile has been overemphasized in the prevailing concept of an esthetic facial contour, and that this overemphasis has often led to serial tooth extractions that were not indicated.

Serial tooth extraction, as an orthodontic procedure, is not intended as an active treatment method; its main objective is to encourage a manner of self-correction that is able to shorten the ultimate period of mechanical procedures. This calls for cautious and deliberate use of serial tooth extractions. No unnecessary risks should be taken, because in most instances there remains ample time for proper orthodontic treatment, and the orthodontist usually will be able—through continuous supervision—to arrive at a correct solution of the problem without using extraction therapy.

*Himmelgeisterstrasse 152, Düsseldorf, Germany*

## Pedodontics

### The relation between eruption of permanent teeth and stage of mental development

K. Sjunnesson. *Svensk tandläk.Tskr.* 52: 427-431 Sept. 1959

The relation between eruption of permanent teeth and stage of mental development was studied in 792 Swedish children entering elementary schools. The boys and girls were between 6 years 9 months and 7 years 11 months old.

Before entering school, the children were tested for school ability and placed either in ordinary or in special classes. The special classes consist of children who are subnormal in intelligence or mentally retarded for various reasons (environment, body frailty, and so forth).

Of the 792 children, 392 were in special classes. The control group consisted of 400 children selected at random among normal first grade school children.

No difference in the number of erupted permanent teeth could be established between the two groups of children.

*Eastmaninstitutet, Dalagatan 11, Stockholm Va, Sweden*

### Operation of the Eastman dental clinics

Basil G. Bibby. *Bul.New York Soc.Den. Children* 11:11 Nov. 1959

Between 1925 and 1931, George Eastman, founder of the Eastman Dental Dispensary in Rochester, N.Y., gave $1,000,000 each to five European capitals, for the purpose of establishing children's dental clinics which would demonstrate the benefits of dentistry for children in each country. For more than a quarter of a century, these clinics have been in operation—in London, Paris, Brussels, Stockholm and Rome. Some of Mr. Eastman's friends had advised him against expecting that systems which worked well in the United States would be equally effective in other countries where professional and social conditions were different, and where the tradition of public-spirited trustee and administration was not developed. Those who foresaw difficulties have proved to be right. Only one of the clinics—that in Paris—is operating on a system similar to that originally set forth.

The Institut d'Hygiene Dentaire et de Stomatologie in Paris still provides a limited range of dental service to a large number of children. It is financed and administered by the Prefecture de la Seine. The Brussels Institut Dentaire George Eastman is similarly administered but is manned only by a skeleton staff because of complications arising out of regional administration and financing. The Istituto Superiore de Odontoiatria in Rome is active, but emphasizes prosthetic dentistry and other adult services. The Eastman-institutet in Stockholm has the most active children's program. It serves as the administrative center for the dental services provided for all children by the government. Clinics in various parts of Stockholm provide for the general care of the children, and the Eastmaninstitutet provides special services, orthodontics and preschool treatment. The clinic is well-supported, and its staff, mostly women, is largely permanent.

The London Eastman Clinic has become the London Dental Hospital. It no longer concentrates on dentistry for children, but serves as a postgraduate training center in all phases of dentistry. It sponsors an active research program.

Although the Eastman clinics have digressed from their original purpose, they are making significant contributions to their communities and to dentistry.

*800 Main Street, Rochester 3, N.Y.*

Prosthetic dentistry

## The acrylic mouthpiece for poliomyelitis and cerebral palsy patients

Robert R. Buckley. *J.Den.Children* 26:248-251 Sept. 1959

An improved acrylic mouthpiece for patients with poliomyelitis or cerebral palsy has been developed at the Cerebral Palsy Clinic of the Indiana University Medical Center. The mouthpiece was designed to aid the patient in typing, in operating wheel chairs and so forth.

The mouthpiece (Fig. 1, above) is made from poly (methyl methacrylate) in one piece. It covers the clinical crowns of all the teeth and has an anterior extension which holds a straw, pencil (Fig. 1, below), or other objects. The extension is directed about 45 degrees to the horizontal.

The mouthpiece has been used by 14 cerebral palsy patients, 3 poliomyelitis patients with quadriplegia, and 2 patients with quadriplegia and spinal injuries. Patients are able to hold the mouthpiece in the mouth for several hours, and can remove and insert it without help. Improvement in swallowing has been noted among patients who used this device to drink; patient feeding time has been reduced. The mouthpiece aids in reducing tongue thrust. No undesirable effects have been noted.

The following steps are taken in constructing the mouthpiece:

1. Alginate impressions and a wax bite of the teeth in centric occlusion are taken.

2. The white stone models of the teeth in centric relationship are trimmed, using the wax bite as a guide. The posterior surface of the models should be flat and in the same plane; the posterolateral surfaces also should be trimmed in the same plane (Fig. 2, above). The white stone models can be duplicated with hydrocolloid to provide working models.

3. Trays of Dentsply Trubase baseplate material are adapted to cover the clinical crowns of all the teeth. Undercuts are eliminated.

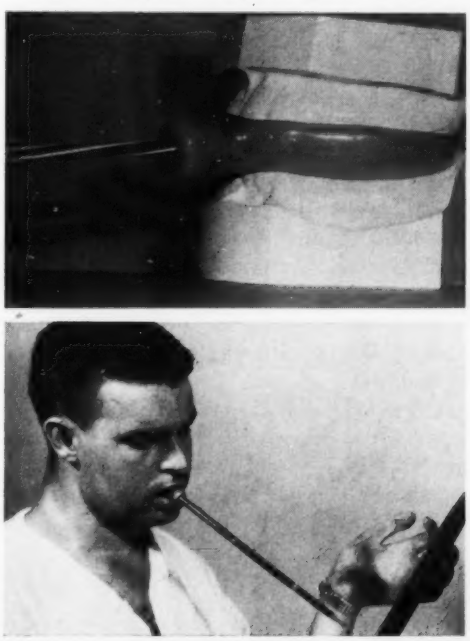
4. The models are lined up and trimmed to centric occlusion on a flat surface. Their width is measured.

5. The models again are lined up, with trays in position, and brought together so that the posterior and lateral surfaces are parallel. The width of the models is recorded. The thickness of the trays is reduced until the models are separated by less than 1.0 mm.

6. When the vertical dimension has been corrected to less than 1.0 mm., the trays are sealed together with wax (Fig. 2, below). The mouthpiece is formed in wax to the desired contour.

7. The anterior extension should be about 45 degrees to the horizontal.

*Figure 1 Above: The completed mouthpiece. Below: The mouthpiece in use, with pencil inserted*



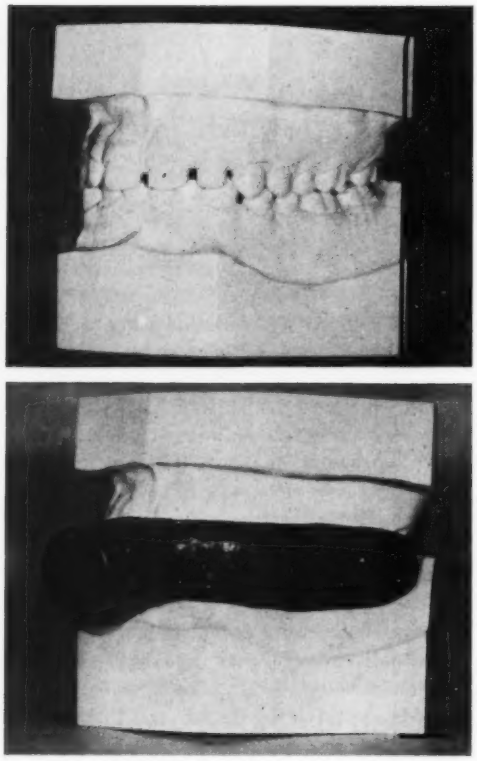


*Figure 2 Above: The trimmed stone models. Below: Mouthpiece formed in wax*

8. The wax model of the mouthpiece is invested in plaster or stone, with a separating medium between the two halves of the flask. After one hour, the flask is placed in boiling water for four minutes. The wax is removed.

9. The plaster models are packed with heat-curing acrylic resin and processed as a regular denture would be.

10. The processed mouthpiece is removed from the flask and polished to a high luster. Undercuts are eliminated.

11. A hole is drilled in the extension of the mouthpiece with an acrylic bur, to accommodate a plastic straw or stick.

The mouthpiece, when completed, should not separate the patient's posterior teeth by more than 1.0 mm.

*Indiana University Medical Center, Indianapolis 7, Ind.*

## Eliminating the guesswork, uncertainty and worry in the mixing of dental cements

K. Paul Ramsay. *D.Practitioner* 10:39-42 Oct. 1959

The ultimate success of all dental castings depends on the chemically balanced mix of cement to seal the margins. The American Dental Association in its specifications for dental cements has set up minimum standards and characteristics for dental cements. C. S. Kile (1935, 1936) has solved the problem of how to mix dental cements properly.

The liquid problem was solved by designing a syringe which keeps the liquid in a sealed cartridgelike container, so that the liquid is exposed to the air only during the few seconds required to eject the fluid onto the slab. A measuring device is incorporated on the plunger which permits an exactly measured quantity of 0.25 cc. of liquid to be ejected. The amount of powder likewise is half of that contained in the American Dental Association's specification, but the powder-liquid ratio remains the same.

With the factors of liquid and powder controlled, Kile overcame the variables of room temperature, slab temperature, dewpoint and relative humidity by making the variables work for him. The mixing slab has a black, baked, glazed surface for better visibility. The undersurface of the slab consists of baked clay which is ribbed to increase the evaporating surfaces, and sufficiently porous to hold water. The slab is kept immersed in water at room temperature so that the porous, baked clay always is saturated. Some minutes prior to use, the slab is removed from the water, the black mixing surface is dried, and the undersurface is placed in a draft of air to accelerate evaporation of the moisture in the clay. This results in cooling the mixing surface.

The final problem of how to mix is solved by incorporating all the powder into all the liquid at the same time. There is but one reaction, instead of the several which occur when small quantities of powder are incorporated, a bit at a time, into the liquid. The correct powder-liquid ratio is maintained, there is no moisture contamination, and the consistency of the mixed cement always is the same. If a stiffer, heavier mix is de-

sired, for cement bases or the setting of orthodontic bands, more powder should not be added. Instead, the dentist waits for the cement to set to the desired consistency, or hastens the set by removing the mixed cement (by means of the spatula) from the cold slab to another slab at room temperature or warmer.

The syringe, slab, liquid and powder are distributed and sold by the Motloid Co., 325 West Huron Street, Chicago 10, Ill.

*John Wright & Sons Ltd., Bath Road, Bristol 4, England*

### Lower partial dentures with precision attachments (Dolder's bar joint)

Marco Fisch. *Schweiz.Mschr.Zahnhk.* 69:845-884 Oct. 1959

As an anchorage for lower partial dentures, especially those with free-end saddles, a new precision attachment, "Dolder's bar joint," was introduced to prosthetic dentistry in 1953.

An investigation of 270 lower partial dentures with Dolder's bar joint has been conducted at the prosthetic department of the Dental Institute of the University of Zürich, Switzerland.

The technical and functional properties of these dentures, all of which had been constructed and inserted about two years ago at the Institute, were determined.

Excessive attrition and fracture of the anterior (artificial) teeth had been prevented by an appropriate hollowing out of the denture base above the abutment caps and clasps, by periodical check-ups by the patient's dentist and by timely relining.

Lingual reinforcement of the denture base by inserting an additional metal bar has—as yet—not proved to be beneficial; further statistical data are necessary to evaluate the claimed property of this part of the attachment: to obtain a desirable relation between the pressure exerted on the denture saddle, the sliding movements of the entire attachment, its curving, and the stress exerted on the abutment teeth.

Gingival inflammation and hypertrophy were the main tissue reactions found in younger denture wearers. Inadequate oral hygiene, and not the dentures, must be regarded as the main cause of such reactions.

In patients who cleaned the denture and the precision attachment carefully and regularly, the inflammatory and atrophic processes were reduced to a minimum as was the incidence of secondary caries.

Loosening of abutment teeth appeared to be comparatively rare; if it occurred it originated from displaced abutment caps and clasps of dentures worn for a certain period of time without adjustment.

Patients with lower partial dentures to which Dolder's bar joint was attached, now wear them without difficulties and state their complete satisfaction. The functional and esthetic results were uniformly satisfactory.

*Via Besso, Lugano, Switzerland*

### Removing tartar from dentures

*Brit.M.J. No.* 5159:1115 Nov. 21, 1959

*Q.*—Is strong hydrochloric acid suitable for removing calculus from dentures?

*A.*—It is not a good idea to use strong hydrochloric acid on dentures. To stop deposition of calculus, it is necessary to have a highly polished surface. Any agent which may interfere with this polish is to be avoided. For this reason, neither strong chemical solutions nor abrasive powders should be used. If the denture is heavily encrusted with calculus, it is far better to have a dentist remove the calculus and polish the denture. Thereafter, a gentle brushing of the denture with ordinary soap and water, night and morning, should keep it free of calculus.

*Tavistock Square, London W.C.1, England*

## Roentgenology

### Hemangiomas of the oral cavity: results of radiotherapy

Dietrich Greuel. *Deut.med.Wschr.* 84:2229-2234 Dec. 11, 1959

Simple hemangiomas situated within the oral cavity usually do not require specific therapy. These benign tumors, made up of newly formed blood vessels, have no precancerous characteristics.

Cavernous hemangiomas (angioma cavernosum), however, require immediate radiotherapy after recognition. These extremely radiosensitive tumors appear as soft and compressible neoplasms, usually having a characteristic bluish-purple color, with irregular margins and a nodular appearance.

In instances in which the diagnosis is doubtful, histologic examination of the aspiration of blood from the tumor mass will confirm the diagnosis of cavernous hemangioma of the oral cavity, usually occurring as an erectile tumor made up of a framework of connective tissue which encloses large spaces filled with blood. The tumor's sensitivity to irradiation, however, decreases with age.

Recent developments, especially the introduction of synthetic radioactive isotopes (strontium$^{90}$ and phosphorus$^{32}$) have greatly improved the treatment possibilities in instances of cavernous hemangioma of the oral cavity.

During the period from 1931 to 1947, 1,317 patients with oral or facial hemangiomas were treated at the Therapeutic Radiation Institute of the St. George General Hospital in Hamburg, Germany. At that time, radioactive isotopes were unknown, and surgical excision of the symptomatic lesions was the method of choice. Satisfactory results were obtained in about 50 per cent of patients.

During the last 15 years, radioactive isotopes (mainly strontium$^{90}$ and phosphorus$^{32}$) were used extensively at the Institute for the treatment of oral and facial hemangiomas in 1,057 patients. Satisfactory results were obtained in 95 per cent of patients.

There were, however, certain unfavorable side effects such as damage to the growth centers in bones, to the facial skin, oral mucosa and muscles, the lenses, mammary and salivary glands, and to the tooth germs. By the use of modern technics of radiotherapy, such damage can be reduced to a minimum.

*Krankenhausstrasse 12, Erlangen, Germany*

### Routine dental x-rays

*J.A.M.A.* 171:500 Sept. 26, 1959

*Q.*—In view of the present trend away from annual routine roentgenographic examinations, please advise regarding recent opinions or policies in relation to the taking of routine dental roentgenograms once or twice a year.

*A.*—The practice of making routine roentgenographic examinations in dentistry varies. An initial, full-mouth roentgenographic examination is regarded as necessary to a proper dental diagnosis. Unless a particular disease or treatment requires otherwise, it is generally unnecessary to repeat the full-mouth examination oftener than every three or four years. However, it is considered good practice to make an annual roentgenographic examination of the teeth with use of bitewing films which permit roentgenograms of the crowns of both the upper and lower teeth on one side to be taken in a single exposure. In patients who have a high index of caries activity, often it is necessary to repeat the bitewing examination every six months. It is of considerable advantage to detect and treat diseases of the teeth and their supporting structures at the earliest possible moment.

*535 North Dearborn Street, Chicago 10, Ill.*

Oral surgery

## Biopsy technique

Nathaniel H. Rowe. *J.Missouri D.A.* 39:15-17 Nov. 1959

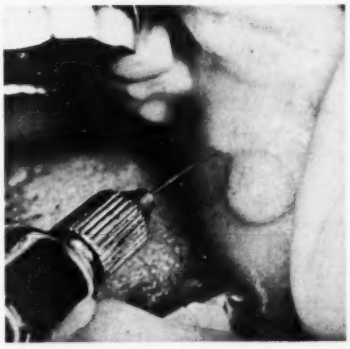
The early recognition and diagnosis of malignancy may help to prevent a patient's death. Any suspicious lesion in or about the mouth should be examined carefully. The legal right and professional responsibility to provide this diagnostic service rests with the dentist.

The biopsy procedure is easily performed in the dentist's office. The operative site (Fig. 1) should be wiped free of mucin and debris with a surgical gauze or cotton swab. Antiseptics or local anesthetics which contain dyes should not be used, as they may mask the characteristics of tissue.

A local anesthetic is injected about the periphery of the operative site (Fig. 2) but not into it. A deep elliptical cut of sufficient length to yield both normal and pathologic tissue is made with the scalpel (Fig. 3). A similar cut is made on the other side of the lesion so that a deep, thin wedge of tissue can be grasped gently and removed with the tissue forceps (Fig. 4). Any tissue strands which prevent the easy removal of this wedge-shaped piece of tissue may be snipped with a sharp pointed scissors.

The tissue specimen should be placed immediately in a container filled with 10 per cent Formalin (formaldehyde, 1 part; water, 9 parts). The opposing tissue edges of the wound are approximated and sutures placed to close the defect.

1



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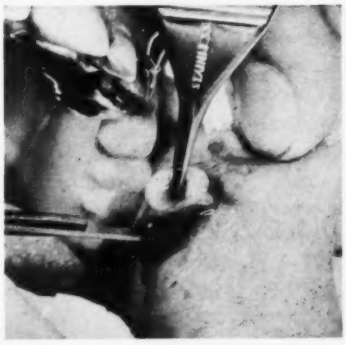

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*1 Operative site is wiped with gauze or a swab*

*2 Local anesthetic is injected at the periphery*

*3 Deep elliptical cut that will yield both normal and pathologic tissue is made with scalpel*

*4 Wedge of tissue is grasped gently and removed with tissue forceps*

This minimizes bleeding and facilitates healing. Postoperative discomfort may be controlled with mild analgesics.

If the lesion is small it may be removed entirely (excision biopsy). If the lesion is large, a representative sample of it should be removed (incision biopsy). A specimen should include normal tissue from the periphery as well as pathologic tissue from the lesion.

The biopsy specimen should be mailed to the pathologist, together with pertinent information such as age and sex of patient, site of lesion, duration, symptoms, and signs and clinical impressions.

*School of Dentistry, Washington University, St. Louis, Mo.*

### Ankyloglossia

Milton Tuerk and Erwin C. Lubit.
*Plast.& Reconstr.Surg.* 24:271-276 Sept. 1959

Ankyloglossia, or tonguetie, is not an uncommon finding at birth. It is manifested by an abnormal attachment of the lingual frenum which may bind the tongue to the floor of the mouth in varying degrees. The effect of this on speech is well known; less well known are the pronounced effects the tongue may produce on dental occlusion, growth and facial form.

Tonguetie arises from a thickening of the genioglossus musculature. The genioglossus muscle of both sides meet in the midline of the tongue where they are elevated into a distinct vertical fold covered by mucous membrane. Since the tongue always is short at birth, it is not easy to determine how much the frenum interferes with its movement. As the infant grows, the tongue becomes longer and thinner toward the tip, and later two dental deformations may occur. First, the inability to raise the tongue to the roof of the palate may prevent the development of an adult swallow, and encourage the continuation of the infantile swallow. This will lead to an open bite. Secondly, the lack of a free upward and backward movement of the tongue may result in an exaggerated thrusting of the tongue against the anterior body of the mandible, and produce a mandibular prognathism. Therefore it is desirable to correct the tonguetie prior to the institution or completion of corrective orthodontic care.

In infancy, the treatment of tonguetie has been relegated to the pediatrician, obstetrician, general practitioner or oral surgeon, and the surgery has consisted merely of snipping the lingual frenum, usually without the use of an anesthetic. Because mucous membrance binding of the anterior or free portion of the tongue often may be associated with a foreshortening of the genioglossus musculature, an incomplete operation often will fail to correct tonguetie. In addition, simple frenulotomy may produce a scar contracture resulting in a more deforming ankyloglossia than was present initially. When a frenulotomy is indicated, it should be done with a Z-plasty of the sublingual mucous membrane to prevent future contractures.

When tonguetie is present in older children, it is advisable to perform a more extensive procedure. Local infiltration of the anesthetic of choice may be used with cooperative children, otherwise a general anesthetic must be employed. The scar band or frenum is incised transversely, midway along its length. The dissection is carried far enough laterally to permit free excursions of the tongue in all directions. The genioglossus muscle is exposed in this procedure since it lies just beneath the sublingual mucous membrane. If upward or forward motions of the tongue still are restricted after mucous membrane dissection, palpation of the genioglossus muscle will show it to be the binding factor. The muscle is cut transversely sufficient to permit free tongue movement in all directions.

The diamond-shaped defect resulting on the undersurface of the tongue is closed by a modified Z-plasty. Mucous membrane flaps are elevated on both sides of the upper triangular half of the defect, transposed and closed with interrupted sutures of no. 0000 mild chromic atraumatic catgut. The lower half of the defect may be closed by simple approximation or a smaller Z-plasty, but the latter usually is not necessary. Ankyloglossia either primarily caused by congenital foreshortening or secondarily by scar contracture will respond well to this treatment.

*Brookhaven Medical Arts Building, 4 Schoenfeld Boulevard, Patchogue, N.Y.*


### The treatment of fractures of the mandible by external pin fixation

I. Norwich, B. C. Uys, L. Hertzenberg, J. N. Barnard and S. Kaplan. *South African M.J.* 33:979-981 Nov. 21, 1959

In the past ten years more than 150 patients with fractures of the mandible have been treated with the method of external pin fixation at the Edenvale Hospital in Johannesburg. Of the 54 single fractures, 65 per cent occurred in the molar region and at the angle of the mandible. Fractures of the upper ramus always were associated with a second fracture elsewhere.

Generally, any fracture of the body of the mandible with displacement or mobility, and all fractures of the angle, require fixation. Fractures of the upper ramus, and fine crack fractures of the body without mobility or displacement, do not require fixation. If the patient has the ability to bite firmly on a hard object without undue pain, fixation is not required.

On admission of the patient, antibiotics are prescribed. When the local swelling has subsided (usually after two or three days), and provided there is no infected wound or abrasion overlying the fracture, pinning is undertaken. The patient is given a general anesthetic, with nasotracheal intubation and pharyngeal plugging. The Roger-Anderson universal set for fixation is used. Pins are driven by means of a power drill into the lower part of the body of the mandible, about ¼ inch above its inferior border. The outer cortex is penetrated and the inner cortex engaged by the self-tapping thread of the pin. Two pins are driven into each fragment (the nearer being about ¾ inch from the fracture line), and their distal ends are clamped to a short crossbar to form a unit. The crossbar carries a double clamp between the pins. The two pins comprising a unit are separated by about 1 inch, and are placed obliquely so as to form an included angle of about 60 degrees. A crossbar of suitable length is engaged in the double clamp of each unit. After manipulation of the fracture and while the teeth are held in accurate occlusion, the clamps are tightened. Where two fractures are to be immobilized, three units generally suffice, the crossbar of the middle unit carrying two double clamps. However, where the two fractures are widely separated, each fracture is immobilized individually, four units being used.

The patient is discharged two to four days after application of the splint and is followed up weekly as an outpatient. The pins are removed in the clinic after six weeks and the patient is discharged. There is firm fibrous union at this stage, although bony union does not occur for at least 12 months.

The technic offers the following advantages:

1. The period of hospitalization is only six or seven days.

2. The patient can enjoy a normal diet immediately after the splint has been applied.

3. The patient is able to return to work within a few days.

*Edenvale Hospital, Johannesburg, Union of South Africa*


### Premedication—an old idea and new drugs

John Adriani. *J.A.M.A.* 171:1086-1090 Oct. 24, 1959

The purpose of prescribing sedatives to be given before general or local anesthesia is to obtain psychic sedation so that the patient is tranquil, nonanxious, and indifferent when he arrives in the operating room. Premedicants should be selected with regard to the patient's physical and mental state, the major anesthetic to be used, and the technic of administration. Premedicants should be prescribed by the person assigned to administer the anesthetic. The chief purposes of premedication are to relieve the patient's anxiety,

to reduce the amount of mucous secretions, to intensify the desired effect or reduce the required amount of the major anesthetic, and to decrease the incidence of complications of anesthesia, such as cardiac arrest, laryngospasm and bronchial spasm.

Although the basic concepts of premedication have changed little since the idea was conceived, technics have been modified as new anesthetics and premedicants have been introduced. But it is doubtful whether any of the drugs recently introduced for premedication are preferable to the customary combination of a narcotic and a belladonna alkaloid; such a combination remains the most versatile, widely used and reliable agent.

Whereas the narcotics and hypnotics act primarily on the cortex and depress from above downward, the ataraxics appear to act primarily on the subcortical structures concerned with the control of the emotions. The ataraxics placate emotionally disturbed patients, but it is not certain that they do the same to "normal" patients.

The efficacy of ataraxics used alone is not impressive. Promethazine used alone for sedation and amnesia is weak and ineffective. It does, however, enhance the sedative action of narcotics, barbiturates and other hypnotics, and permits use of smaller doses of the latter. Perhaps in time a suitable tranquilizer which can supplant the hypnotics and narcotics will be introduced. Today there is no such drug available.

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### Endotracheal anesthesia with 'Evipal' in maxillofacial surgery: experience in 1,008 instances

R. Stellmach, H. Scheunemann and W. Bick.
*Fortschr.Kief.Ges.Chir.* 5:43-47, 1959

Endotracheal anesthesia with "Evipal" ("Evipan"-Bayer) has been used in 1,008 surgical interventions in the maxillofacial region at the West German Clinic of Oral Surgery of the Medical Academy of Düsseldorf, Germany.

Evipal sodium (hexobarbital sodium) is the sodium salt of 1,5-dimethyl-5-(1-cyclohexenyl)-barbituric acid, which is poorly soluble in water but freely soluble in ether or alcohol. It is a potent ultra-short-acting endotracheal anesthetic (of from 15 to 30 minutes' duration) which provides complete muscular relaxation and an early recovery period.

Evipal does not cause excessive salivation or secretion of mucus, hemorrhagic tendencies or capillary oozing during anesthesia and surgery. It does not irritate the respiratory tract.

Induction usually is accomplished by using a face mask delivering a mixture of nitrous oxide and oxygen (75:25). After the analgesic state has been reached, Evipal is added so that the patient may reach the first plane (third stage) of anesthesia. One hundred per cent oxygen is then administered and the patient given an intravenous injection of succinylcholine in combination with atropine sulfate.

When the patient is in apnea, the endotracheal tube is inserted and attached to a to-and-fro semi-rebreathing apparatus. Respiration is supported until there is full return of the intercostal muscle activity and an adequate respiratory exchange. After a mouth prop is inserted, and the pharynx packed with moistened gauze, the surgical intervention can be started. Anesthesia usually is maintained with nitrous oxide and oxygen (60:40) and Evipal sodium. In less than 4 per cent of patients, it was necessary to supplement the anesthetic mixture with a moderate ether drip to enable the patient to tolerate the endotracheal tube.

Sensitivity to Evipal occurred in 2 per cent of patients, manifested by bradycardia, arrhythmia and changes in the patient's color. These patients responded readily to removal of Evipal from the anesthetic mixture and to high oxygen flow.

Endotracheal anesthesia with Evipal proved satisfactory in 1,000 patients of the 1,008. Difficulties in insertion of the endotracheal tube caused by abnormal anatomic conditions such as microgenia, ankylosis of the temporomandibular joint, micrognathia and prognathism, were experienced in 0.5 per cent of patients.

The recovery time of the patients in this series was favorable, with almost all patients reacting immediately to cessation of the anesthetic.

The use of Evipal as a complementary agent to nitrous oxide and oxygen in endotracheal anesthesia for oral surgical procedures was highly successful. This anesthetic has many advantages: it is a stable, nonexplosive agent which helps the

patient to tolerate the insertion of the endotracheal tube in a light plane of anesthesia.

Operations performed under endotracheal anesthesia with Evipal included: (1) resection of the upper jaw; (2) resection of the lower jaw; (3) resection of other bones in the maxillofacial region; (4) removal of lymph nodes; (5) removal of lymph nodes combined with resection; (6) plastic surgery of the face; (7) mandibular osteoplastic; (8) repair of cleft lip; repair of cleft palate; (9) repair of temporomandibular defects; (10) routine oral surgery, and (11) routine dental interventions.

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### Chlorpromazine hydrochloride in the treatment of trigeminal neuralgia

V. Popescu and F. Filipescu. *Stomat.,Bucharest* 6:139-148 April-June 1959

Several patients with essential trigeminal neuralgia were treated by means of a new method at the Clinic of Maxillofacial Surgery of the University of Bucharest, Romania.

A mixture of procaine hydrochloride and chlorpromazine (Largactil) hydrochloride was injected into the main stem and the branches of the fifth cranial nerve to obtain a peripheral blocking of the nerve. This method was especially indicated in patients in whom the neuralgia had affected one or two branches of the nerve, the trigger zone, the midbrain, the medulla oblongata and the spinal cord. Prior to treatment, the regional involvement had been ascertained by clinical examination and intercranial roentgenography.

A solution containing from 2 to 4 per cent of procaine hydrochloride and 2.5 mg. chlorpromazine hydrochloride was injected at intervals of from two to eight days. According to the technic of peripheral truncular anesthesia, an average of from two to three injections was made into the selected site of the nerve's main stem or the specific branches involved. In isolated instances one or two injections were sufficient. Occasionally, however, from six to nine injections were required.

Peripheral blocking of the fifth cranial nerve was applied in 42 patients with trigeminal neuralgia causing unilateral paroxysms of pain, the trigger zone being the maxillofacial region—especially the musculature of the face, the jaws and the eyelids. In 40 patients (95 per cent) the attacks of spasmodic pain as well as all associated phenomena subsided completely, and did not recur during a follow-up period of 20 months.

Although the serial injections of a combination of procaine hydrochloride and chlorpromazine hydrochloride did produce various side effects such as dryness of the mouth, nausea and vomiting, they were not serious and could be easily controlled. There were no toxic reactions.

Patients with a history of jaundice, liver disease, or heart disorders, or who were comatose, were excluded from this treatment.

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### Comparison of the recovery from methohexital and thiopental anesthesia in man

Lawrence D. Egbert, Steffen R. Oech and James E. Eckenhoff. *Surg.,Gyn.&Obst.* 109:427-430 Oct. 1959

The induction of anesthesia by intravenous thiobarbiturates unquestionably is most acceptable to the patient. Consciousness is lost quickly and pleasantly without the need to tolerate a face mask or inhale a malodorous anesthetic. Recovery from anesthesia often is smoother and usually is more acceptable than with the inhalational anesthetic agents. These factors, and the impression that the thiobarbiturates are "ultra-short-acting" have led to their choice for anesthesia for outpatient surgery.

A new oxybarbiturate, methohexital sodium, was compared for duration of effect with thiopental sodium in 14 healthy subjects. A complex reaction timer was used to estimate quantitatively the ability of a subject to perform the tasks of driving a car by recording in milliseconds the time required to turn a wheel or apply the brake after an appropriate signal.

The average dose of methohexital producing hypnosis was 92 mg.; that for thiopental was 253 mg. The duration of unconsciousness was not

significantly shorter after methohexital (average 179 seconds) than after thiopental (average 231 seconds). However, the time of complete recovery, that is, when the subjects had returned to control reaction times, was shorter for methohexital (854 seconds) than for thiopental (1,268 seconds). The subjects stated they experienced less "hangover" and were mentally clearer after methohexital.

Side effects were noted more frequently after use of methohexital. Motor movements, consisting of fibrillation around the eyes and mouth, and in one subject generalized muscular twitching, occurred after methohexital anesthesia. These movements subsided within two to three minutes.

The data support those of previous reports indicating that methohexital is about two and a half times as potent as thiopental with a comparative duration of effect about two-thirds as long.

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### Minimum dosage local anaesthesia

Adrian Cowan. *Irish J.M.Sc.* No. 404:365-368 Aug. 1959

Lidocaine is more efficient and acts more rapidly than procaine, and is effective in less than half the dose required of procaine. The onset time (the time from insertion of the needle until the development of anesthesia suitable for operative work) of lidocaine anesthesia is predictable in most patients with a considerable degree of precision.

The mean onset time for infiltration is about 1 minute 20 seconds; for mental blocks, 1 minute 40 seconds, and for mandibular blocks, 4 minutes 30 seconds. Anesthesia with lidocaine may be confidently predicted in 98 per cent of injections.

The following doses of lidocaine for everyday dental procedures are recommended:

Routine restorations in single teeth or two adjacent upper bicuspids, 0.25 ml.

Routine extractions or restorations in upper molars, cuspids and incisors, 0.5 ml.

Mental blocks, 0.75 ml.

Routine restorations in two or three adjacent upper molars; pulp extirpation, or jacket or three-quarter crown preparation on single-rooted teeth; infraorbital block, or sphenopalatine block, 1.0 ml.

Surgical extractions, except lower molars, 1.5 ml.

Mandibular blocks, 1.8 ml.

The author has used these doses satisfactorily in the past three years.

In the diagnosis of obscure neuralgic pain, a knowledge of the onset time together with extremely low dosage infiltrations will help to identify the causative tooth in the upper jaw or lower incisor region, by limiting the region of anesthesia to one or two teeth. If the pain is controlled within the onset time designated above, the tooth anesthetized is responsible. A similar procedure with mental and mandibular nerve blocks is used in the region of the mandibular bicuspids and molars.

It is highly probable that soon a substance will be synthesized which, when injected into the controlling site of an anesthetized region, will rapidly bring that tissue back to normal again. This will reduce the discomfort of prolonged anesthesia, and will be of value for diagnostic purposes where pain has been masked deliberately or accidentally.

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### Qualitative identification of local anesthetics in their dosage forms

Henry M. Koehler and Edward G. Feldmann. *Analyt.Chem.* 32:28-31 Jan. 1960

This study, generally limited to those local anesthetic agents used in dentistry, describes methods for the identification of local anesthetics in dosage forms, including tablets, ointments, jellies and solutions. Local anesthetics in aqueous injectable solutions or in other dosage forms can be identified by the formation of well-characterized, easily prepared, crystalline picrate and tetraphenylborate derivatives and by descending paper chromatography.

Mixtures of local anesthetics can be separated and their components identified by chromatographic procedures.

Ultraviolet spectroscopy is well-suited for quantitative and qualitative analysis of selected local anesthetic compounds. When the identity of the drug has been established by other methods, ultraviolet procedures can be used for quantita-

tive analyses, especially of those compounds which are derived from *p*-aminobenzoic acid. The wavelengths of maximum and minimum absorption of local anesthetics, with their approximate absorptivities at the maxima, are listed.

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### The use of regional anesthesia with general analgesia in oral surgery practice

Bruce L. Douglas and Harold Kresberg. *J.Oral Surg.,Anesth.&Hosp.D.Serv.* 17:83-90 Sept. 1959

The safest anesthesia for a surgical procedure in the mouth is regional anesthesia, but if this is used alone, the surgical procedure can be unpleasant for the patient. Nitrous oxide-oxygen analgesia can be an effective means for providing physical and mental relaxation during the operative procedure. The basis for success with this technic is the effectiveness of the regional anesthesia. This technic is effective in about 95 per cent of all patients who require oral surgical operations on an ambulatory basis, regardless of the extent of the operative procedure.

In the clinical research project described, nitrous oxide-oxygen analgesia with regional anesthesia was used in about 5,900 oral surgery patients. Only 89 patients reacted unfavorably.

In the third plane of analgesia, the patient is asleep and unconscious. It is in this plane that analgesia supplemented by regional anesthesia provides the oral surgery patient with adequate anesthesia for any surgical procedure in the mouth. Surgery can commence whenever the regional anesthetic has taken effect. There is no time limit in the use of the technic for ambulatory patients.

Patients who are subjected to the analgesia-local anesthesia technic awaken almost immediately on completion of the procedure and need minimal time for postanesthetic recovery. There is practically no nausea if the patients refrain from eating or drinking for five hours preanesthetically, and minimal gastrointestinal upset even if the patient eats shortly before the procedure. Patients are completely oriented within minutes after the procedure and can leave the office safely.

The effect of the local anesthetic in the region of surgery provides the patient with a relatively comfortable immediate postanesthetic state. By the time the local anesthetic begins to wear off, the patient often is home and can start taking analgesics to relieve whatever postsurgical pain may develop.

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### Pediatric anesthesia: an evaluation of preoperative medication

Alfred Freeman and Leonard Bachman. *Anesth.& Analg.* 38:429-437 Nov.-Dec. 1959

A double blind study of the preoperative sedation of children about to undergo short, routine operations was conducted on 292 children ranging in age from 6 months to 12 years, at the Children's Hospital of Philadelphia. The following 12 drugs or combinations of drugs were evaluated: (1) atropine, (2) scopolamine, (3) atropine plus promethazine, (4) scopolamine plus promethazine, (5) atropine plus triflupromazine, (6) scopolamine plus triflupromazine, (7) atropine plus pentobarbital, (8) scopolamine plus pentobarbital, (9) atropine plus morphine, (10) scopolamine plus morphine, (11) atropine plus pentobarbital plus morphine, and (12) scopolamine plus pentobarbital plus morphine. The drugs were administered to the patient in his room about one hour before induction of anesthesia. Observations were made by one of the authors in the preoperative and induction period, and by the recovery room nurse in the postoperative period.

Pentobarbital plus scopolamine, pentobarbital plus morphine plus scopolamine, and pentobarbital plus morphine plus atropine proved significantly more effective in providing sedation for the children and in easing the induction of anesthesia. The combinations with scopolamine were significantly more effective in decreasing the secretions than were those with atropine.

Morphine, when combined with pentobarbital or scopolamine, significantly decreased postoperative excitement even though it did not increase the preoperative sedative effect.

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## Oncology

### Morphologic effects of carcinogens, orally administered, on facial skin and oral mucosa of mice

Eino Erkki Niskanen and Lauri Merenmies. *Naturwissensch.* 46:583 Oct. 15, 1959

Several authors have demonstrated that the systemic administration of carcinogens (oral, intraperitoneal or intravenous) produces malignant lesions in the facial skin and the oral mucosa of experimental animals.

A. C. Ritchie (1957), however, claimed that the systemic administration of carcinogens cannot cause any pathologic alteration in the skin or mucosa of mice that is visible under the simple microscope.

In the present study, carried out by the staff of the department of pathology of the University of Helsinki, Finland, sufficient experimental data were obtained to prove that cancerous lesions in skin and mucosa of mice are produced by orally administered carcinogens.

In the investigation, female mice, from two to three months old, were used. Each experimental animal in 15 series (25 in each) received by oral administration a single dose of ethyl carbamate (urethan), 20-methylcholanthrene (MC) or 9,10-dimethyl-1,2-benzanthracene (DMBA) in 0.15 ml. polyethylene glycol-400 (Carbowax 400).

Each mouse then was kept overnight isolated in a glass jar. No attempt was made to prevent self-licking. Biopsies of the involved regions were performed after 2, 6, 10, 16 and 30 days prior to killing each mouse. The specimens were processed in the usual way, and the sections stained with hematoxylin-eosin.

Histologic examinations revealed the presence of malignant lesions in the facial skin and the oral mucosa, obviously produced by orally administered carcinogens. Epidermal hyperplasia showed an increased number of basal cells, a slight increase in mitotic activity and an increased number of differentiated cells significantly disturbed in their organization. Hyperplastic changes, often combined with hyperkeratosis, appeared particularly in the opening of the follicles. The salivary and sebaceous glands were atrophied. The morphologic changes seemed to be strongest in the group that had received 9,10-dimethyl-1,2-benzanthracene (DMBA) and weakest in the group that had received ethyl carbamate (urethan). Even in this group, the malignant changes were convincing.

The experiments will be continued with control series to demonstrate to what extent the alterations are caused by systemic administration of carcinogens.

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### Carcinoma of the upper lip, a sequela of roentgenotherapy

M. Klvaňa and E. Kuňstadt. *Bratisl.Lekár.Listy* 39:492-497 Aug. 1959

The use of ionizing irradiation has a profound effect on tissues with a high mitotic rate. Because these tissues contribute to the defense of the human organism, ionizing irradiation, and especially roentgenotherapy, can be expected to interfere with the immune response.

Increased susceptibility to recurrence of tumors after roentgenotherapy has been observed at the Oncological and Roentgenological Clinic of the University of Kosiče, Czechoslovakia.

A squamous cell carcinoma of the upper lip occurred in a 77 year old woman. The lip became enlarged and immovable, and the patient was handicapped when eating and experienced fulgurant pain. The necrotic substance accumulated around the tumor produced a foul odor. The upper jaw, however, was not involved either by direct extension of the tumor or by metastasis.

The patient's history revealed that she had received, probably incorrectly, irradiation treatment in great doses (up to 27,000 r) for obviously benign lesions on both lips about ten years prior to the occurrence of the carcinoma. The use of great doses of roentgen or radium rays seemed to have been the predisposing factor in the develop-

ment of the squamous cell carcinoma of the upper lip.

Histopathologic examination revealed that the newly formed tumor cells had changed their morphologic characteristics and had become hypertrophic, and that their nuclei were hyperchromatic. Granules appeared and the tumor cells became transformed into structureless masses of keratin.

Because roentgenotherapy was contraindicated, treatment consisted of electrosurgery under local anesthesia. Considerable distortion of the facial contour was avoided, thereby providing a satisfactory esthetic result. No plastic repair of the defect was necessary. Follow-up examinations, made during the postoperative five year period, showed no recurrence.

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### Early detection of oral cancer

Sol Silverman, Jr. *PDM 1-31* July 1959

Simple but accurate screening procedures for the earliest possible detection of oral cancer appear to be at this time the main hope for improving the usually poor prognosis associated with this disease. About 9 per cent of all cancers are accounted for by oral cancer; this is equivalent to nearly 40,000 new cases a year in the United States. Oral cancer occurs primarily in persons past the age of 40 years. This incidence grows with each additional decade of life. About four men are afflicted for every woman, although the sex ratio varies with each oral site.

Symptoms of oral cancer are inconsistent and of little value diagnostically. Microscopic tissue analysis is the only method of diagnosing malignant change, and it is for this reason that biopsy is urged for most lesions. But biopsy for various reasons often is delayed or omitted.

The exfoliative cytologic technic offers an intermediate screening method of great practicability for use in the innocuous and unsuspected early malignancy. The technic is accurate, fast, simple, painless and leads to no complications.

For more than a century it has been known that cells are being shed constantly from the surface of mucosal coverings throughout the body. Papanicolaou and Traut (1943) established the cytologic technic as an effective diagnostic procedure. The reliability of intraoral exfoliative cytology has been established by several investigators. Squamous cells which are constantly being shed from intraoral mucosal surfaces may be collected and screened for dyskeratotic or malignant characteristics. These cells are best obtained by rotating a clean, cotton-tipped applicator over the area under study. The applicator then is rolled over a clean glass slide within an area of a coverslip one inch square, and is immediately immersed in a fixative consisting of equal parts of ether and 95 per cent ethyl alcohol. The slide may be removed for staining in about a half hour, or it may be left in the fixative if precautions against evaporation are taken.

The Pharr modification (1954) of the Papanicolaou method is used in staining; hematoxylin, orange G and eosin-light green are used. From the time the smear is taken, a report can be forthcoming within 90 minutes. A negative report indicates only that the particular sampling contains no malignant criteria in the obtained cells. A "suspicious" report deserves a follow-up with further tissue analysis, either cytological or histological. A report of "malignant cells seen" requires immediate steps to establish a definite diagnosis. The simplicity, speed, accuracy and lack of trauma make it obvious why this technic serves as a useful, reliable adjunct to biopsy in the detection of oral cancer. Where biopsy is indicated, the exfoliative cytological technic is not a substitute. Biopsy still is essential for the final diagnosis.

Two case reports illustrate the value of the exfoliative cytological technic in oral cancer. With this technic, false negatives occur no more frequently than they do in the biopsy technic, whereas false positives have been reported in only one study.

Since early diagnosis and early and adequate treatment are so essential in the management and prognosis of oral cancer, consideration of exfoliative cytology as a screening aid is urged.

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Forensic dentistry

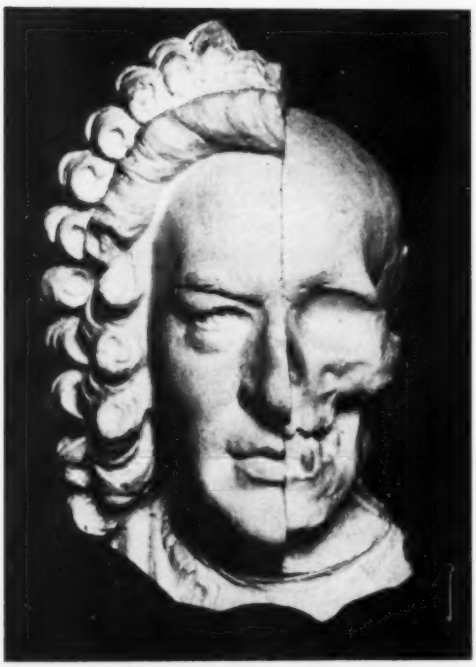
## Identification of skulls in past and present

O. Grüner. *Deut.med.Wschr.* 84:1270-1275 July 10, 1959 and *German M.Monthly* 5:22-24 Jan. 1960

In forensic medicine or dentistry, as well as in anthropology, the identification of human remains is of increasing importance.

The task of identifying the remains of recently deceased persons may be comparatively easy, although postmortem changes or deliberate mutilations can render the identification exceedingly difficult. However, most corpses can be identified by using modern standard methods such as the classification of fingerprints (arch, loop, whorl and composite), the comparison of dental charts and the establishment of the individual anatomic and pathologic abnormalities. In instances in which decomposition is so far advanced that few bones remain intact, accurate identification often is impossible.

*Figure 1 Identification of the skull of Johann Sebastian Bach (His' method)*



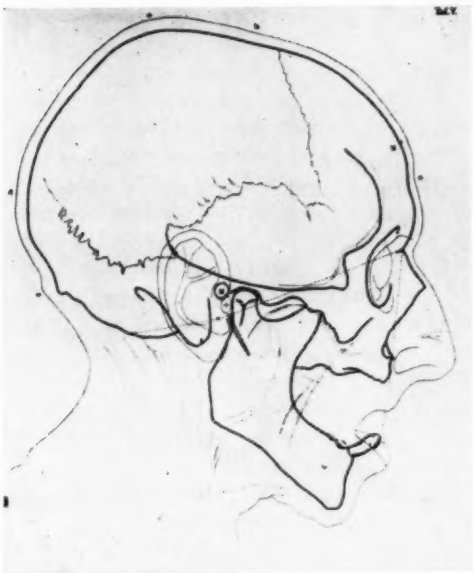


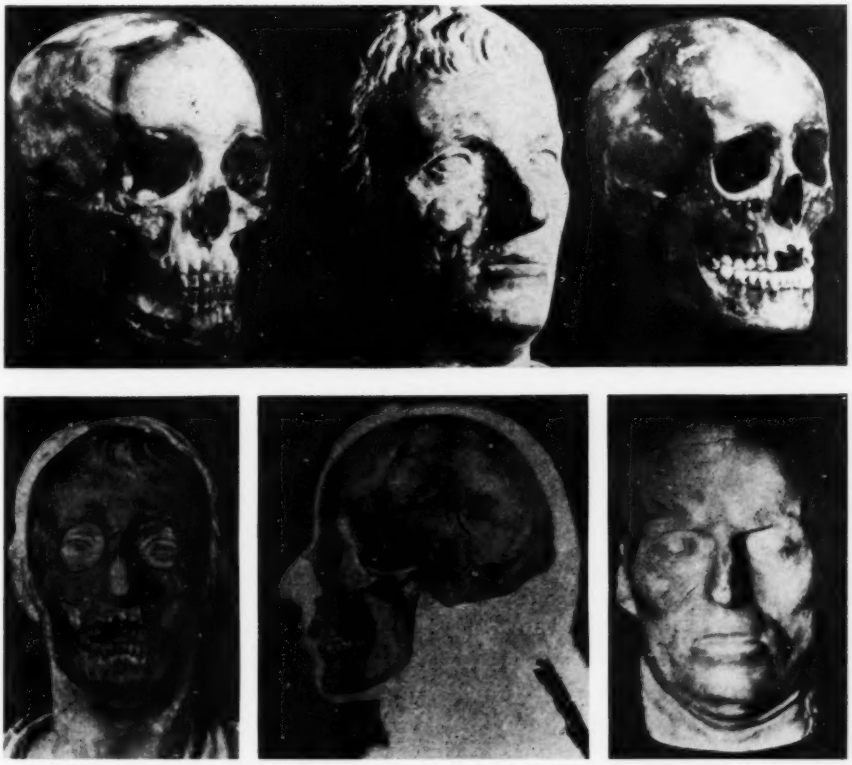
*Figure 2 Comparison between skull and death mask of Immanuel Kant (Welcker's method)*

The human skull of a corpse usually provides many clues as to the individual features of the craniofacial and maxillofacial regions during life. Studies of the skulls of many famous personalities, carried out by anatomists during the nineteenth century, demonstrated that accurate identification can be achieved by evaluation and recognition of individual characteristics, but these studies also indicate the limitations and difficulties which may arise in the identification of human remains if no comparative data are available.

Early authors, especially Welcker, His, Schaafhausen and von Froriep, devoted themselves to the task of identifying the skulls of prominent persons, in spite of the fact that in most instances only a limited number of useful clues, such as portrait paintings or written descriptions, were available. These researchers not only made valuable contributions to historical knowledge, but

*Figure 3 (Right) Comparison between a photofluorogram and the skull in a recent criminal case*

*Figure 4 (Below) Different methods used to determine the identity of the skull of Friedrich Schiller. Upper left = skull in the vault of the princes of Weimar. Upper center = Klauer's method. Upper right = identified skull. Lower left = comparison between Klauer's reconstruction and Schiller's skull. Lower center = comparison between a silhouette (1780) and Schiller's skull. Lower right = Schiller's death mask*



developed systems of measurements which still can be applied to the identification of skulls.

Welcker and His, in 1883 and 1884, made innumerable measurements of the thickness of the soft tissues and of the relations between osseous structures and external features of the face. Most of the current methods of identifying skulls are based on their work.

In 1894, when the Church of St. John (Johanneskirche) in Leipzig was rebuilt, His, an expert in forensic medicine, aided in the search for the grave of Johann Sebastian Bach, the German composer. He identified, with a high degree of probability, a skeleton as that of Bach.

His' method, which was based on the comparison of contemporary portraits showing peculiarities in the formation of the skull with the features of the skull of the corpse, has been used frequently in the identification of murdered persons. In forensic medicine, however, His' method demonstrated severe drawbacks and little evidential value.

In 1788, Goethe assumed that he had identified the skull of Raphael Santi, the Italian painter, in a cemetery in Rome. In 1883, however, Schaafhausen proved that Goethe was mistaken because Raphael had not been buried in Rome.

Although most of the portraits painted in earlier times provided more faithful representations of the facial features than those painted by modern artists, the use of death masks for identification of skulls, as recommended by Welcker, Tandler and von Froriep, has proved to be far superior.

In 1884, Welcker developed a method, named after him, in which tracings based on death masks provided accurate identifying marks. By this method, Welcker succeeded in identifying Immanuel Kant's skull, and von Froriep tentatively identified Friedrich Schiller's skull. Later, the skull of Joseph Haydn also was identified by Welcker's method.

Recently, attempts have been made to use oblique photofluorograms and roentgenograms for the identification of skulls of murder victims by projecting the important landmarks laterally from the face's midline sagittal plane and by correcting the distortions caused by central projection on the images. However, depending on the point from which the fluorograms or roentgenograms are taken, some of the significant landmarks always appear as flattened or exaggerated. The weaknesses of this method are especially regrettable because today, in most instances, photographs of missing persons are available for comparison.

In a few criminal cases, a method of photomontage has been employed. The skull of the corpse is photographed in a position corresponding as closely as possible to that of the photographic print available, and the two pictures are superimposed. Although by no means free of errors, the photomontage technic has been used successfully in several instances.

Before any identification of the skull of a corpse is attempted, all available portraits, death masks and dental charts should be studied and the important data recorded. Supporting evidence often may be obtained from individual peculiarities even though they may not appear as significant to the material at hand. Of course, the age and sex of the missing (or found) persons whose skull is studied must be taken into consideration.

Certain deficiencies of remodeling the soft tissues in their relations to the craniofacial and maxillofacial bones have become evident. It is questionable, therefore, whether postmortem measurements of soft tissues can represent the true conditions during life.

More accurate identification of a corpse can be obtained by examination of the teeth and comparison with dental charts. The tooth eruption time as well as the size and shape of the jaws (especially of the lower jaw) may serve as an approximate index of age. The presence of dental restorations or of dentures in the skull examined is an important factor in correct identification because the dentist who inserted them usually will recognize his work immediately.

All identification methods, however, confirm the truth of Goethe's statement: "There can be nothing in the skin which is not apparent in the bones." On this fact, in the last analysis, all identification methods depend.

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Bacteriology

## Bacterial plaques on tooth surfaces

K. C. Winkler and O. Backer Dirks.
*Tschr.tandheelk.* 66:791-816 Nov. 1959

The natural environment of the human tooth is the bacterial plaque and not the saliva. The process of the initiation of dental caries, therefore, can be understood only by determination of the properties of and the processes within the bacterial plaques.

Salivary mucoid, by virtue of its physical properties, covers every surface of the oral cavity. On the tooth surfaces, bacteria and food particles adhere to the salivary mucoid layer, and the acids resulting from bacterial fermentation precipitate the excretion of additional mucoid, thereby promoting the growth of bacterial plaques. During this process more and more bacteria and food particles become incorporated in the plaques.

Plaque growth usually is governed by localized factors. Generally, the bacterial plaques are comparatively thick over the interproximal areas and relatively thin over the free surfaces. The anatomic form of the adjacent surfaces, however, determines the possible thickness of the bacterial plaque. The actual thickness may be influenced by the effects of various other factors such as nutrition, masticatory function, oral hygiene, and others.

Bacteria and other microorganisms constitute at least 70 per cent of the plaque material. The composition of the bacterial flora within the plaque varies significantly, depending on the effects of localized factors such as site of plaque, flow of saliva, nature of food, and many others. The greatest part of the bacterial flora within plaques is formed by streptococci, Neisseria including Veillonella and thread-shaped microorganisms. Lactobacilli form only a small minority of the plaque population, the ratio being 1 lactobacilli to 100,000 cocci. Strongly proteolytic microorganisms usually are absent or if present occur in insignificant numbers. Bacteriologic differences of plaques over healthy and carious areas are statistically insignificant although lactobacilli have been isolated more frequently from bacterial plaques covering tooth surfaces with initial caries.

Disaccharides and monosaccharides diffuse relatively easily into bacterial plaques. Because virtually all bacteria within the plaque form acids from saccharides, the pH may drop within a few minutes to a level of 5 or lower, which is the critical pH level below which human enamel may be decalcified. The pH level near the enamel surface is lower when the bacterial plaque is thicker, and the rate of acid production is higher. A high flow rate and a high buffering capacity of the saliva favor the diffusion of acid out of bacterial plaques. The time that saccharides (such as sugars) are present in the oral cavity, and not the quantity of sugars consumed, is of paramount importance because it determines the period during which the pH level is low enough to promote decalcification.

The different susceptibility to caries of the various tooth surfaces in one individual can be explained in terms of effective plaque thickness, that is, the shortest distance between the enamel surface and the cover formed by plaque and saliva. This is the distance over which the produced acid must diffuse to be eliminated or neutralized.

It seems improbable that there exists a specific microorganism that causes caries. Virtually all bacterial species of the plaque form acid from sugars, thereby contributing to the decalcification of enamel.

The aciduric microorganisms of the bacterial plaque (mainly aciduric streptococci and occasionally lactobacilli) continue to produce acid below pH 5, thereby aggravating the carious process.

It is more probable that lactobacilli are selected by the low pH level to produce acid as a consequence of the local thickness of the plaque and a continued intake of carbohydrates, than that they are to be considered as the cause of caries.

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Histology

## Histological observations on the teeth of an ancient Belgian people

Hyacinthe Brabant, Louis Klees and René Jean Werelds. *Deut.Zahn Mund Kieferhk.* 31:43-53 Aug.-Dec. 1959

Macroscopic examination of the teeth of an ancient people who dwelt approximately between the fifth and the eighth century A.D. in the region of Coxyde in Belgium, revealed an incidence of dental caries significantly lower than that in recent man.

In an attempt to determine whether this low caries incidence could be related to hereditary, nutritional or other factors, a series of teeth from skulls and jaw fragments, found in the tombs near Coxyde, was examined histologically at the Dental Clinic of the University of Brussels. Previously, it was established that the diet of these people had consisted mainly of fish and other aquatic animals.

In the investigation, the teeth which exhibited macroscopic evidence of caries were not taken into further consideration. The teeth free of any visible carious lesions (almost 90 per cent) showed under the microscope an undamaged and smooth surface, and a minimum of attrition. Most of the teeth, however, showed an accumulation of calculus, sometimes covering even the crowns (Fig. 1). The outer enamel appeared normal in color in most of the teeth; a comparatively small number of teeth exhibited dull and chalky white spots or brown stains. In ground section, it was possible to ascertain that the darker spots were not localized on the enamel surface but extended to a certain depth, without reaching to the dentinoenamel junction (Fig. 2). The discoloration spread independently of the histologic structure of the enamel and showed no resemblance to the characteristics of caries.

In most specimens, the enamel cuticle was still observable although the teeth were approximately 1,500 years old. After decalcification, these specimens were observed under the microscope, and it was possible to notice that in certain areas, the enamel cuticle had regenerated. In these ancient teeth, the enamel lamellae were numerous, and it was possible (as it is in teeth of recent man) to differentiate under the microscope the natural lamellae from artificial minor fissures, even after decalcification (Fig. 3).

The enamel tufts and the accretion (Retzius') lines were observed in the ancient teeth with almost the same regularity as in the teeth of recent man.

In none of the examined teeth did the grooves or the contact points show any evidence of initial caries.

Because of the extreme fragility of the teeth, the ground sections could not be thinned down sufficiently to enable visualization of all the histologic characteristics. This was the reason why only decalcified specimens could be used.

In a large number of teeth, the roots showed a yellowish discoloration and a brownish impregnation. Often, the brown spots had penetrated deeply into the dentin. In isolated instances, the brown spots were limited to the radicular surfaces but more often they still were observable in the proximity of the root canals (Fig. 4).

In sections of decalcified dentin, it was possible to observe severe loss of dentinal substance which probably occurred by resorption (Fig. 5). The center of these destructive processes showed that the dentin was perforated by a multitude of canaliculi which run independently and distinctly from the paths of the dentinal tubules.

The cementum showed discoloration and impregnation similar to those in the dentin. There were, however, specific lacerations in the cementum which were not observed in the primary or secondary dentin.

In general, the teeth of the ancient Belgian people, although resistant to caries, showed no appreciable difference from the teeth of modern man so far as their histologic structures were concerned.

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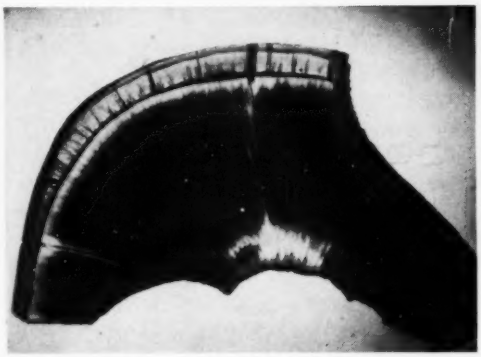
*Figure 1 Lower left lateral incisor. Minimal attrition but a calculus accumulation covering the crown*

*Figure 2 Sagittal section of crown of a lower left lateral incisor. Unstained. The dark spots extended deep into the enamel but without reaching the dentinoenamel junction*



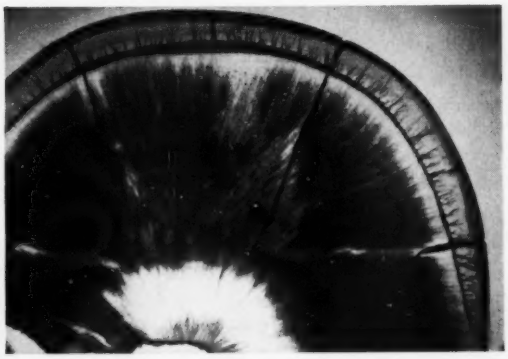


*Figure 3 Left: Sagittal section of the crown of a lower left lateral incisor. In distilled water. After decalcification, numerous enamel lamellae became visible. Right: Section parallel to sagittal section. The elongation of the three visible enamel lamellae may be artifacts*

*Figure 4 Lower first bicuspid. Unstained transverse section of a root. The brown spots penetrated the dentin to the proximity of the canal*

*Figure 5 Zone of decomposition in the dentin, similar to but not identical with normal resorption*

### Occurrence of mast cells in gingivae, cicatricial tissue after extraction and connective tissue under compression

P. E. B. Calonius. *Schweiz.Mschr.Zahnhk.* 69:488-497 June 1959

The mast cells, characterized by large basophilic and matachromatic granules, have been quantitatively determined in oral tissue specimens obtained from a region of 1.16 sq. mm.

These specimens were taken from 39 persons (26 women and 13 men), varying in age from 15 to 78 years. Clinically these specimens could be grouped as follows: (1) normal gingival papillae (9 persons); (2) normal gingivae obtained from an area dorsal to the third molars (4 persons); (3) inflamed gingival papillae (5 persons); (4) healthy cicatricial tissue (11 persons); (5) healthy cicatricial tissue obtained beneath complete dentures (6 persons), and (6) inflamed tissue obtained beneath complete dentures.

The quantitative and qualitative investigations were carried out on metachromatically stained basic specimens, and included determination of the morphologic shape of the mast cells and the demonstration of inflammation cells.

The mast cell count in the entire experimental material revealed that in an area of 1.16 sq. mm., $123 \pm 88.9$ mast cells were present, with a range of variation from about 20 cells to nearly 400 cells.

Clinically, healthy gingival papillae specimens contained significantly more mast cells than were observed in inflamed gingival papillae specimens.

No statistically significant difference existed between healthy and inflamed cicatricial (connective) tissues subjected to continued compression by complete dentures.

Comparison of the cicatricial tissue formed after extraction with the cicatricial tissue subjected to denture compression revealed a tendency toward mast cell decrease. No difference, however, was observed in instances in which the specimens were derived from the same person.

Specimens that exhibited metachromatically stained basic material contained more mast cells than the unstained specimens. In all instances, this difference was statistically significant.

The occurrence of lymphocytes and plasma cells did not affect the mast cell count in the entire area but plasma cells in an increased number appeared in the surroundings of the mast cells. In the regions in which an increasing number of lymphocytes appeared hardly any mast cells were observed.

The morphologic shape of the mast cells varied from slightly oval to oblong, and vacuolated cells were observed in all specimens.

In the subepithelial regions of the specimens, large accumulations of mast cells were determined, whereas other sites were almost free of mast cells.

The metachromatic stain of the basic material varied, and metachromasia of the basic material occurred in all specimen groups, at least in certain parts of the preparations.

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### Histochemical analysis of lesions in incipient dental caries

Ralph R. Steinman, C. Gordon Hewes and Robert W. Woods. *J.D.Res.* 38:592-605 May-June 1959

Five hundred caries-susceptible Osborne-Mendel albino rats were weaned and divided into two groups at 21 days of age. One group was placed on a cariogenic diet. The other group received Purina laboratory chow, which is practically noncariogenic. The animals were sacrificed serially from 21 to 50 days of age.

Usually, either thin ground or decalcified sections have been employed for the microscopic study of dental tissues. Although such preparations have provided valuable information, they have certain limitations. When ground sections are made, the tubular protoplasm is dehydrated, the pulp is macerated and the heat generated in the grinding process could inactivate enzymes which might be present. Serial sections are possible in decalcified material, but the tissue is so altered in the process that it is no longer possible to study the exact conditions present at the time of death. In both technics, microbial plaques and impacted food particles usually are lost.

A technic was employed in this study which preserves the food present in the grooves of the teeth, bacterial plaque, enamel, dentin, pulp and

supporting structures. The animals were decapitated, the major portion of flesh removed from the jaws, and the jaws frozen immediately. The jaws were mounted in ice with the buccal surface horizontal, and cut with a microtome in a deep freeze. The cuts were made about 8 microns thick and were continued until about a half of the tooth structure was shaved away. The block of ice then was removed with a saw. Another block of ice was shaved until a smooth surface was obtained. The first block of ice then was mounted on this new block with water, the cut surface down. The shaving was continued until sections of from 20 to 30 microns in thickness were obtained. These sections remained frozen until used.

Suitable histochemical technics revealed striking changes which precede the classical picture of the carious lesion. These changes include a cessation of oxidation reduction, an increased stainability of carbohydrate and protein, the presence of a reducing agent, and loss of mineral.

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### The mechanism of the blood supply to synovial membrane

C. J. Griffin. *Austral.D.J.* 4:379-384
Dec. 1959

In a previous communication (1959), the author demonstrated the existence of arteriovenous anastomoses, bridges and venous valves in the pterygoid muscles of man. Since the blood supply to joints is carried by the same blood vessels that supply most of the muscles concerned with their movements, it should follow that a similar vascular mechanism exists. It would seem that during movement, the nutritional and lubricatory requirements of joints should be higher than when they are at rest. An investigation was undertaken to see if such a mechanism exists in temporomandibular joints.

Temporomandibular joints were removed en bloc from several fetuses at term. These blocks were embedded in paraffin, serial sections were cut and stained and examined under the microscope.

The vascular architecture of the synovial membrane is basically the same as the fundamental pattern described by Zweifach (1949) for other tissues, but it has peculiarities. The anterior part of the temporomandibular joint receives its blood supply mainly from the articular branches of the masseteric artery. The posterior part of the joint receives its blood supply from articular branches of the superficial temporal, maxillary, deep auricular, and anterior tympanic arteries. The arteries to the joint are located in the periphery of the capsule. From these arteries, arterioles arise that traverse the capsule and interarticular disk to terminate in a rich capillary network in the synovial membrane.

The synovial capillary bed is located superficially. On the way to the synovial membrane, fine metarterioles arise which nourish the capsule, the mandibular meniscus and the condyle. From the synovial vascular capillary bed, venules arise that terminate in collecting venules. Not far from the origin of the main arteriole an arteriovenous anastomosis or shunt can be detected which proceeds to the collecting venule.

The morphologic characteristics of the vascular pattern in the temporomandibular joint are similar to those described by the author in human muscle.

The function of the arteriovenous anastomoses is to regulate the exchange of substances across the synovial barrier during rest and activity of the temporomandibular joint. The anastomoses appear to be essential in the maintenance of a constant chemical and fluid medium. The distance of the arteriovenous anastomoses from the synovial cavity suggests that the anastomoses are under direct vasomotor control, and can be effected either directly or reflexively.

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## Biochemistry

### Presence of hemosiderin in inflammatory regions of the oral cavity

L. Heilmeyer, F. Wöhler and W. Rusche.
*München.med.Wschr.* 101:2001-2005
Nov. 6, 1959

Concentrations of iron in the reactive connective tissue in sterile and bacterial abscesses of the oral cavity were found in a study made at the Medical Clinic of the University of Freiburg/Breisgau, Germany.

The study revealed that, depending on the length of time that had elapsed after the application of iron preparations, the connective fibrous tissues initially absorbed the iron, and secondarily the histiocytes accumulated the iron in the form of hemosiderin.

Hemosiderin accumulation was demonstrated in specific granulation tissues, around tuberculous cavities and in the giant cells of oral tubercles (Langhans' cells).

Tests carried out with radioactive iron demonstrated that iron accumulation occurred in the region of inflammation in the oral cavity. Concentrations of hemosiderin also were detected in granulated tissue formed after tooth extractions and oral surgical interventions. These hemosiderin depots within other oral tissues affected by inflammatory processes were detected in experimental animals as well as in patients. The existence of hemosiderin in the involved oral regions, and the protective function of hemosiderin against toxins and destructive bacterial and fungus products, frequently represent the balance between success and failure in treatment. In man, several different types of hemosiderin in oral tissues have been discovered, dependent on genetically determined differences in the hemoglobin structure. In certain instances, the presence or absence of hemosiderin accumulations govern the development of hematologic abnormalities and produce certain clinical manifestations, such as gingival lesions resembling those of scurvy. Hemorrhage may occur at the tips of the interdental papillae which ultimately necrotize, become gangrenous and detached from the teeth. The oral bones may become osteoporotic, fractures previously incurred fail to heal, and the teeth become loose and fall out. Oral wounds may fail to heal or, if recently healed, may break down. The facial skin becomes pigmented with hemosiderin and melanin, pallor caused by anemia and jaundice caused by blood breakdown into large hematomas appear, and the patient's temperature is elevated to from 101-102°F.

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### Zambrini's ptyaloreaction

*Deut.med.Wschr.* 84:2047 Nov. 6, 1959

*Q.*—What is Zambrini's salivary reaction?

*A.*—A specific reaction (change in color) occurring in the human saliva has been described by A. R. Zambrini, an Argentine physician. This phenomenon caused by the action of chemical agents now is called Zambrini's ptyaloreaction. Neither the discovery nor its mechanism has been reported in German dental or medical literature. The reaction, according to Zambrini's original report, is produced by adding to 1 cc. of human saliva, 0.33 cc. of a reagent consisting of 1 Gm. cochineal carmine, 7 Gm. bioxyantroquinone, 1 Gm. trioxyantroquinine, 1.03 Gm. tincture of madder, and 95 per cent alcohol. Before the test is made, the subject's mouth must be rinsed with lukewarm water at least three times.

Zambrini's ptyaloreaction is a calorimetric method to determine the resistance in saliva before and after surgical interventions. After adding from 15 to 20 drops to 1 cc. saliva, a change in color takes place varying from light yellow to dark purple. Light hues indicate a lack of resistance in the saliva to surgical trauma, and dark hues a strong vital resistance. There occurs also a specific formation of circles in treated saliva; light or no circle formation indicates strong resistance, multiple circle formation an inadequate resistance. This formation of circles occurs on the surface of the saliva-reagent mixture.

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Pathology

## Mandibular joint pain: a survey of 100 treated cases

Hamish Thomson. *Brit.D.J.* 107:243-250
Nov. 3, 1959

A review of the literature indicates that temporomandibular joint pain often has been attributed to trauma, and that many authors assert that the trauma commonly is due to abnormalities in the occlusion of the teeth.

In an investigation of the symptoms, histories and analyses of occlusions in patients with and without temporomandibular joint pain, two series of patients at the Eastman Dental Hospital in London were surveyed. The first group, consisting of 100 patients with temporomandibular joint pain, were treated by restoring good occlusal and jaw relationships where such treatment was indicated as a result of the analysis. Four years after the last treatment, efforts were made to follow up the effects of treatment at four-month intervals. The second group consisted of 100 patients without temporomandibular joint pain; this group served as the control series.

In the group with pain, the ratio of women to men was 3:1; in the control series, it was 2:1. In the group with pain, 40 per cent were women between the ages of 18 and 30. Onset of pain was gradual in 47 patients, and sudden in 53 patients. In 28 patients there was a history of some activity immediately prior to the onset of pain; in 26, the action was of a stretch type, such as a wide yawn, a tooth extraction or a prolonged course of dental treatment. In two patients there was an injury by a blow. Of the remaining 25 patients with a sudden onset of pain, several mentioned that vigorous chewing made them aware of the pain; others were first aware of pain on waking.

In the group with pain, three patients had arthritis in other joints; there were no such instances in the control series.

Most patients described the pain as a dull ache which came and went without known cause; it was unilateral in 47 of the 59 patients who described the pain in this way. The attack usually lasted between one and two hours.

Pain on mastication was described by 41 patients. The site always was over the condyle and was unilateral in 36 of the 41 patients. This symptom was described as a dull pain which began near the end of a meal, or earlier if the food required hard chewing, and lasted for from one to two hours. Other symptoms mentioned included limitation of opening, pain on opening the mouth wide, pain on pressure, and stiffness of the jaw on waking in the morning.

Developmental abnormality of the teeth or jaws was observed in seven patients in the pain series and in four patients in the control series.

After a functional analysis of the occlusion, treatment generally was carried out in two stages. The objective of the initial treatment was to restore the occlusal level to contact at 2 to 4 mm. upwards and forwards from rest position. This was achieved by inserting a diagnostic splint or acrylic resin bite plane, in 61 patients. The objective of the permanent treatment was to restore full occlusal contact at the level determined by the diagnostic splint where this had proved successful. The objective was achieved in 46 patients by restorative dentistry.

With initial treatment, the level of occlusion was altered in 80 patients, which resulted in improvement in 77 patients (96 per cent). Function was altered or improved in seven patients, and six of these (86 per cent) showed an improvement. Treatment by appliance to prevent the ill effects of bruxism was 100 per cent successful in 11 patients.

Of the 46 patients receiving permanent treatment through restorative dentistry, there was no recurrence of pain over a minimum period of four years in 22 patients (47 per cent of those receiving such treatment); 13 other patients (28 per cent) maintained recovery for a six month period after which they were not seen again. The remaining 11 patients (25 per cent) experienced occasional recurrence of the pain while continuing to wear the appliances.

The evidence from the results of treatment is that correction of defects in the occlusal relation-

ships of the teeth, based on a functional analysis, was successful in relieving temporomandibular joint pain in a large majority of patients.

The symptoms suggest that the initial lesion in temporomandibular joint pain is an irritation of the tissues directly related to the joint and that this can be followed by spasm of the temporalis or lateral pterygoid muscles which causes stiffness of the jaw on waking.

An assessment of the occlusal relations of the teeth and jaw in function revealed that displacement of the mandible on closure from rest position, tooth grinding habits, and lack of posterior tooth support had a similar incidence in subjects with and without temporomandibular joint pain. Such factors, therefore, cannot be considered as etiological factors, although to some extent they may be contributory factors.

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## Trigeminal neuralgia

*Lancet* No. 7074:670 March 28, 1959

The triggering of pain often is a useful diagnostic feature in trigeminal neuralgia. In many patients a sensory stimulus applied within the trigeminal area will regularly precipitate an attack of tic douloureux. The trigger area varies from a small specific part, such as a particular area of the lip or the gingiva, to the whole area of the second or third division of the nerve. The nature of the stimulus also may vary—a puff of cold wind, light touch to the affected area, talking, and eating and drinking are all well-known forms—but usually there is an element of light touch about it, strong or painful stimuli often having no effect. The threshold for effective stimulus varies; patients soon discover that during a bout of neuralgia, triggering is all too easy, but that once the bout has subsided the stimulus may become ineffective unless prolonged and intensified.

Some attempt has been made to investigate in animals the mechanism of triggering by recording afferent potentials in the trigeminal nerve. The problem has not been studied in man. Kugelberg and Lindblom (1959), however, have found some 50 patients stoical enough to have their pain deliberately precipitated, and have reported on it. Their work has confirmed and amplified clinical observation. Trigger zones are commonly limited in area and often are constant for a given patient. The trigger stimulus is subject to spatial and temporal summation and to a refractory period. The threshold for the trigger stimulus—apart from the refractory period—varies. Kugelberg and Lindblom suggest that the majority of "spontaneous" attacks of tic may be partially triggered; this would account for the fact that a peripheral nerve block may terminate a given attack dramatically. The recognition of a refractory period also may have therapeutic value if patients and practitioners can be found determined enough to exploit it.

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## Symptoms of the head and neck of dental origin: I. Pain caused by mandibular dysfunction

Harold Gelb and Godfrey E. Arnold. *J.D.Med.* 14:201-211 Oct. 1959

Dentistry has reached that stage of development where dentists are ready to aid the otolaryngologist and other medical specialists in the differential diagnosis of head and neck syndromes. In addition, dentistry offers corrective procedures for restoring the proper position of the jaws.

In the past year observations were made at the New York Eye and Ear Infirmary of 100 patients with otolaryngological disorders of dental origin. Most of these patients complained of pain in the head and neck region which was traced, for the most part, to "trigger areas" in the muscles of mastication. The most common sites for pain were the temporomandibular joints and the internal pterygoid muscles.

Patients were rendered free of symptoms, or showed substantial improvement, by the administration of ethyl chloride spray or injections of procaine to the trigger areas in the muscles where spasm occurred. Frequently, injection into the internal pterygoid muscles would bring relief of tenderness and pain in the other affected muscles. Favorable results in some patients were obtained by correcting the occlusion by means of equilibration or by the use of temporary acrylic splints

with adjunctive myofunctional therapy. Other patients required a combination of such procedures. The ratio of female to male patients was 3.5:1. Although bruxism was reported in only seven patients, many of the other patients either clenched, ground or gnashed their teeth. A majority of the 100 patients in this study were found to be emotionally tense or upset. Twenty-five per cent of the patients complained of subjective ear noises. Correction of the jaw relationships by means of temporary acrylic splints brought some improvement in half of the patients with such subjective ear noises.

Five case reports illustrate the methods of treatment.

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### Pathogenesis of German measles

Th. Port. *Zahnärztl.Praxis* 10:274 Dec. 1, 1959

German measles (rubella) is a mild disease that requires little, if any, treatment. Although the causative virus remains unaffected by any therapeutic agent known, early recognition of the disease, especially in pregnant women, can be facilitated by thorough examination at the dental office.

The clinical oral findings after an incubation period of from five days to three weeks consist of a characteristic eruption which produces pink spots on the facial skin and the oral mucosa but no desquamation. The absence of coryza and of Koplik's spots helps in the differential diagnosis from measles (rubeola or morbilli).

German measles generally can be considered as an unimportant factor in the development of disabilities in children, if directly affected. However, this acute, exanthematous, febrile virus disease may produce congenital cataracts, congenital heart disease, deaf-mutism, microcephaly, mental retardation and clefts in lips or palates of children of mothers who acquired the disease during the first trimester of pregnancy. An association also seems to exist between an increased occurrence of disturbed calcification of dentin and enamel in these children and the incidence of German measles acquired in the earlier portion of the first trimester of pregnancy by their mothers.

Pregnant women who are exposed to the causative virus may be given from 15 to 20 ml. of gamma globulin to prevent the development of deformities in the infants.

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### Intrathoracic suppuration and dental sepsis

R. H. R. Belsey. *Brit.D.J.* 107:251-259 Nov. 3, 1959

John Alexander in 1938 stated categorically that no edentulous patient ever developed a nonmalignant lung abscess; unfortunately, his statement frequently is overlooked or forgotten. Alexander's statement was based on a wide experience of thoracic disease, gained at a time when dental sepsis was more common than it is today.

The exact mode of spread of the infection from the oral cavity to the lungs has been much discussed. For long it was thought that the blood stream was the most likely avenue along which the infection spread, but it now is assumed on good grounds that in the vast majority of instances the infection spreads by way of the air passages.

Pulmonary suppuration occurring spontaneously in patients with dental sepsis is seen far less commonly than 20 years ago, chiefly because of improved standards of oral hygiene.

It was supposed at one time that the use of local anesthesia would reduce the incidence of postoperative lung complications. This proved not to be so, because heavy premedication prior to local anesthesia may depress the normal defense barriers of the bronchial tree. The pulmonary infection may be acute in onset and fulminating, or there may be an interval of two to three weeks before the lung infection becomes obvious. The symptoms are pyrexia, a dry and irritating cough, and a pleuritic pain in the chest. Within a day or two the cough becomes productive. On the basis of the odor of the expectorated pus, the infection may be classified as putrid or nonputrid; the prognosis in the nonputrid type is better than that in the putrid type.

Modern trends in anesthesia may have increased the risk of spread of infection. In most instances general anesthetics are administered through an endotracheal tube. The mere act of

intubation of the larynx may lead to contamination of the air passages from the nasal or oral cavities.

When a patient is seen in the outpatient department, and it is decided that some elective surgical procedure is necessary, it is the responsibility of the surgeon to refer the patient to a dentist for inspection of the teeth and, if necessary, for the elimination of any focus of open sepsis. Any dental treatment indicated should be carried out if possible before the patient is admitted to the hospital for surgery. The gingivae should be healed completely before general anesthesia is induced. It is the anesthetist's responsibility to refuse to administer a general anesthetic to any patient for an elective surgical operation in the presence of dental sepsis. If an emergency operation is necessary, much can be achieved in the immediate preoperative period by mechanical cleansing of the gingivae and debridement with a toothbrush and an antiseptic mouthwash, or better still, by scaling the teeth. This simple step will go far to eliminate the risk of subsequent lung infection.

The elimination of all oral infection is obligatory before any major surgical procedure on the lungs or esophagus. Neglect of this precaution will lead to a high incidence of defective healing of the bronchial stump, bronchopleural fistulas and empyema after lung resection. After esophageal resection and anastomosis there will be more instances of leakage from the anastomosis and severe mediastinitis.

It is surprising that the responsibility of untreated dental infection for many of these fatal complications has not received wider recognition and led to the adoption of the appropriate prophylactic measures as a routine preoperative procedure. An adequate period of time must elapse to permit complete healing of the gingivae before the major surgical procedure is undertaken.

The inhalation of blood and blood clot, or of a tooth or portion of a tooth, during a dental operation may lead to serious pulmonary complications. The practice of performing dental operations with the patient in sitting position increases the risk. If a foreign body remains in the bronchial tree for any length of time, ulceration of the bronchial mucosa will occur and may lead ultimately to bronchostenosis and secondary bronchiectasis or chronic abscess formation. The consequences are serious in nearly every instance. Spontaneous evacuation of the foreign body is uncommon. The management of this problem is of concern to both the dentist and the thoracic surgeon. Prophylaxis is important. The entry of foreign material into the trachea may be prevented by operating with the patient in head-low position. The administration of an anesthetic by a cuffed intratracheal tube, together with packing of the pharynx, will contribute to the safety of these procedures. However, some of these methods may not be feasible in a busy dental practice.

The use of drugs or anesthetics that depress the laryngeal and cough reflexes should be avoided.

The onset of cough, pyrexia, pain or discomfort in the chest, and dyspnea within a day or two of a dental operation should arouse a suspicion of atelectasis and infection due to bronchial obstruction, but the onset of symptoms may be delayed for two or three weeks. Postural drainage, percussion therapy, and chemotherapy may control the infection rapidly when it is caused by the inhalation of blood, but not when it is caused by the presence of a foreign body. When it has been established that a tooth or other foreign body has become impacted in a bronchus, bronchoscopy should be performed immediately. The actual removal of the foreign body usually is a relatively simple technical problem for the thoracic surgeon.

In the future, all dental prostheses should be constructed from radiopaque materials. Motor accidents frequently are accompanied by smashing of the victim's dentures. If only densely radiopaque materials were used in dentures, diagnosis and treatment of the intrathoracic complications of these accidents would be facilitated.

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Physiology

## Oral pigmentation—physiologic and pathologic

Clifton O. Dummett. *New York State D.J.* 25:407-412 Nov. 1959.

Melanin, according to Fitzpatrick and Lerner (1954), denotes various shades of brown and black pigments occurring naturally in mammals, insects, plants and marine animals. Melanin pigments result from polymerization of oxidation products of orthodihydroxyphenol compounds to insoluble substances of high molecular weight. In human beings, melanin can be defined as an insoluble brown or black pigment formed by a series of chemical reactions in the enzymatic oxidation of tyrosine by tyrosinase attached to mitochondria in the cytoplasm of pigment cells in the skin and uveal tract. Melanin derived from mammalian tissue is always bound to a protein. Melanocytes are dendritic-shaped, mature pigment-forming cells. A melanoblast is an immature melanin-forming cell at its origin in the neural crest, in its migration to the epidermal-dermal junction during the embryonal stage of development. Melanocytes occur in the basal layer of the epidermis at the junction of the epidermis and dermis. They may occur in compact cellular masses or as groups of cells scattered through the dermal connective tissue or in malignant melanomas.

The differences of shades in the skin of human beings are the result of differences in amount of pigment. In Caucasians, regional variations in skin pigmentation over the body occur normally from greatest to least as follows: nipple and areola, navel, genitalia, dorsal surface of forearm, hypogastrium, axilla, epigastrium, flexor surfaces of the extremities, and the palms and soles. Similar variations occur in Negroes, Indians, Chinese, Koreans, Italians, Hebrews and practically all other groups comprising the human race. Even though the amount of pigmentation varies quantitatively in different races, it tends to follow a prescribed pattern of individual regional body variations.

The lips comprise the extraoral tissues and exemplify rather spectacular variations both in form and appearance. The transitional zone between the skin covering the outer surface of the lip and the true mucous membrane lining the inner surface is the vermilion border. The transitional region is characterized by numerous, densely arranged, long papillae of the lamina propria. Eleidin in the epithelial cells makes them translucent. The red color of the lips is due to the blood which is visible through the thin parts of the transparent epithelium. Extraoral tissues may be affected with melanin pigmentation in the bases of the interdental papillae.

In the intraoral tissues, there is a variation in the amount of pigmentation from greatest to least as follows: gingivae, buccal mucosa, hard palate, tongue, soft palate and the floor of the mouth.

The color of the healthy gingivae is variable, ranging from a pale pink to a deep bluish purple. Between these limits of normalcy are a large number of colors which depend primarily on the intensity of melanogenesis, the degree of epithelial cornification, the depth of epithelization and the arrangement of gingival vascularity. Color variations may be uniform, unilateral, bilateral, mottled, macular or blotched, and may involve the gingival papillae alone or extend throughout the gingivae and into other oral tissues. Nonpigmented gingivae are found more often in fair-skinned persons, whereas pigmented gingivae usually are seen in dark-skinned persons.

Color changes of the oral mucosa often are of diagnostic value. Pathologic pigmentations with which the oral tissues may be affected include the following: (1) color changes induced by and associated with local pathologic conditions; (2) color changes induced by and associated with systemic pathologic conditions; (3) color changes induced by and associated with neoplasms, and (4) nonclassified color changes.

Twenty-one case histories illustrate some of the factors which may produce color changes of the oral mucosa.

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## Therapeutics

### Curability of scleroma

Aleksandra Durska-Zakrzewska. *Pol.med.hist. & sc.* 2:8-14 Oct. 1959

Scleroma of the maxillofacial region is a rare disease which endemically occurs chiefly in the East European countries but occasionally also in other parts of the world.

Scleroma appears in three forms: (1) the infiltrative type; (2) the atrophic type, and (3) the cicatricial type. The pathologic course of the disease, which is comparatively slow (sometimes lasting several years), causes a specific infiltration and granulation not only deep into the nasal and oral cavities, but often involving the nasopharynx, throat, larynx and the mucous membranes of bronchi and trachea.

Most typical of scleroma are infiltrations located at the transition between nasal and oral cavity, in the subglottic region of the larynx, in the trachea above the bifurcation and within the orifices of the main bronchi. Atypical scleroma is characterized by lesions localized on the facial skin, the gingivae, the tongue, the hard palate, and in the region of the saccus lacrimalis.

Atrophic scleroma is characterized by diminution of the nasal and oral mucosas, and by desiccations of glandular secretions in the form of greenish crusts. These have a specific, offensive odor, and appear not only within the nasal cavity but also covering the oral mucosa. Pure forms of atrophic scleroma of the maxillofacial region are seldom observed; far more frequent are mixed forms of atrophic and infiltrative scleroma.

Recent infiltration of scleroma produces pale pink, soft lesions which are visible only as isolated foci protruding on the surface of an unchanged mucosa. Older infiltrations are subject to cicatricial changes which promote the formation of hard, rigid tumors by hypertrophy of scar tissue.

In the differential diagnosis of scleroma of the maxillofacial region, the lesions of ozena, syphilis (in its atrophic form), tuberculosis and various tumors (in their developing stage) should be considered.

Although the symptoms of scleroma usually are well-defined, biopsies are necessary to confirm the clinical diagnosis.

During the last 10 years, 142 patients with scleroma of the maxillofacial region have been treated at the Medical Academy of Poznań, Poland. Most of the patients had not received previously any form of therapy; others, however, had undergone roentgenotherapy or surgical procedures such as tracheotomy or curettage. Of these 142 patients, 126 were treated with streptomycin, 12 with Terramycin and 4 with a combination of streptomycin and Terramycin.

All forms of scleroma of the maxillofacial region responded readily to antibiotic therapy. Infiltrative and atrophic scleroma, and even cicatricial scleroma, can be, therefore, considered as curable.

The most favorable response to antibiotic therapy was obtained in patients who had not received any form of treatment prior to the investigation.

Streptomycin and Terramycin yielded almost equal therapeutic effects, and the cure was confirmed by serial histopathologic, serologic and bacteriologic examinations.

In the treatment of scleroma of the maxillofacial region, all previously used methods can be replaced by antibiotic therapy with the possible exception of a surgical excision of the nonspecific scars that remain after termination of the antibiotic therapy.

*Medical Academy of Poznań, Poland*

### Clinical aspects of infectious mononucleosis

F. Mingrino and T. Copaitich. *Aggiorn.pediat.* 10:21-28 Oct.-Dec. 1959

Pseudomembranous angina (ulceromembranous stomatitis), associated with infectious mononucleosis, is difficult to differentiate clinically from the various forms of diphtheria. Not only do both diseases produce almost similar symptoms in the oral cavity such as swelling of larynx and pharynx and patchlike lesions on the oral mucosa,

but simultaneous occurrence of diphtheria and infectious mononucleosis has been observed frequently.

Of 35 patients with infectious mononucleosis, treated at the Pediatric Clinic of the University of Rome, Italy, six patients showed the presence of *Corynebacterium diphtheriae* in the saliva.

The patients were from 1 to 29 years old; the majority, however, consisted of preschool and school children.

Because the patients were admitted to the clinic under suspicion of diphtheria, initial treatment consisted of diphtheria anatoxin and Calmette's serum.

The use of antibiotics depended on the results of the Paul-Bunnell test (which was positive in 50 per cent of instances) to rule out the presence of a concomitant bacterial oral or respiratory infection.

In three patients, neurologic and hematologic complications occurred. They were treated for from seven to ten days with prednisolone, starting with 10 mg. every six hours for two days with a gradual reduction to a single dose of 5 mg. on the last two days. After cessation of the steroid treatment, no relapses or recurrences were observed.

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### Clinical laboratory studies on a new topical antibiotic: Thiostrepton

Austin H. Kutscher, Edward V. Zegarelli, Robin M. Rankow, James Mercadante and John D. Piro. *Oral Surg.,Oral Med.& Oral Path.* 12:967-974 Aug. 1959

Thiostrepton is an extremely active antibiotic obtained from an unidentified strain of streptomyces isolated from a New Mexico desert soil sample. It is primarily bacteriostatic, and is stable in simulated gastric and intestinal juices, feces, urine and blood plasma.

This study was undertaken to investigate the effects of topical administration of thiostrepton ointment to the oral mucous membranes in 25 adult patients. Oral disturbances were not directly responsible for any of the patients being hospitalized. Detailed blood chemistry, hematology and urine studies were undertaken in order that any undesirable systemic effects might be observed. Each patient received about 1.43 Gm. daily of a 1 per cent thiostrepton ointment in divided doses for a period of one week.

No alteration in general body function was observed and no untoward reactions occurred. Since thiostrepton is inactive in terms of systemic therapy when administered orally and ingested, it is expected to be limited by its physical properties to topical application.

It would be most desirable to have for use in the treatment of accessible superficial infections of the oral cavity and pharynx, an additional effective topical antibiotic which would be topically active with concomitant relative absence of activity after ingestion. Preliminary laboratory studies indicate that thiostrepton may be such an agent. Continuing studies concerned with the therapeutic effectiveness of this compound will be reported.

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### Hypersensitiveness to penicillin

*Zahnärztl.Praxis* 10:261 Nov. 15, 1959

*Q.*—Which technic can be employed to demonstrate hypersensitivity to penicillin in dental patients? Which method can be used for desensitization?

*A.*—The technic to be employed for demonstration of hypersensitivity to penicillin depends on the degree of the allergic reactions present. In instances in which the suspicion of contact dermatitis exists, skin and patch tests can be applied, whereas in anaphylaxis, conjunctival tests should be made. The penicillin dosage in dental patients cannot be standardized because the degree of allergic reactions varies significantly. Even minimal doses often produce unusual and exaggerated reactions. Experience proves that even negative tests do not eliminate the possibility of allergy produced by exposure to penicillin or any other foreign agent.

Desensitization can be obtained only by persons trained in antianaphylaxis; attempts by dentists to achieve the state of desensitization in their patients are, therefore, contraindicated.

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Public health dentistry

### The Riverside preschool dental project

F. H. Compton, R. C. Burgess, Trudi G. Mondrow, R. M. Grainger and Gordon Nikiforuk. *J.Canad.D.A.* 25:478-488 Aug. 1959

A comprehensive preschool diagnostic and educational program was initiated in the Riverdale District of Toronto in 1955 to determine the value of this procedure for improving the dental health of preschool children of diversified ethnic origin residing in a densely populated urban environment. Children in two other districts, Yorkville and Moss Park, served as controls.

The project was cosponsored by the Toronto East Dental Association and the Department of Public Health. It was financed through a federal public health grant and supplemented by civic appropriations. A dental hygienist, dental assistant and clerk were engaged as field personnel to conduct educational, case finding, referral and follow-up procedures for preschool children brought to district child centers for routine health supervision and immunization.

In the three-year period reviewed, 5,423 children were examined; 3,236 children were two to four years old; 2,238 children had no apparent dental defects; 1,966 children were referred for dental care and by August 1958, 970 had had all their defects corrected.

Routine school dental inspection in 1958 disclosed that about one quarter of the Riverdale kindergarten children had been seen previously in the preschool project. Interest was not confined to preschool children. Demonstration dental health lessons were given annually in every kindergarten class.

At the end of three years, general improvement in the level of dental health was observed in children entering Riverdale elementary schools, whereas there appeared to be little change in children of similar age from the two control areas.

To determine whether an annual single topical application of 8 per cent stannous fluoride solution would protect the deciduous teeth of preschool children, a clinical trial was initiated in 1957. The subjects were children between 2½ and 3½ years old; 185 received application of the fluoride solution and 180 children received topical application of distilled water and served as a control group. In April 1959 the children were reexamined. The children in the experimental group who received topical application of stannous fluoride developed 24 per cent fewer occlusal cavities and 30 per cent fewer interproximal cavities than children in the control group who received application of distilled water. The total caries increment was 28 per cent lower in the experimental group.

A study of the pH of the oral cavity indicated that the beneficial effect of stannous fluoride apparently is not influenced by the acid concentration capacity of the child's oral microflora.

In the light of the experience at Riverside, it is recommended that preventive preschool dental programs form the basis of organized community dental health effort.

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### A public health dentist looks at topical fluorides today

Donald J. Galagan. *J.Den.Children* 26:164-172 Sept. 1959

Water fluoridation is the most efficient and effective method known of preventing dental caries. However, there is still a great need for a caries preventive such as the use of topically applied fluorides. The evidence that a topically applied fluoride solution will reduce the incidence of caries has continued to increase since Bibby reported his observations in 1942. The topical application of fluorides has a place today in treating children in rural areas, in all communities not yet fluoridating their water supply, and, in a more limited way, in those communities already supplementing the fluorine content of the water.

Rough estimates indicate that only about 750,000 children receive topical fluoride treatments each year under the auspices of local and state health departments, and about 850,000 chil-

dren receive such treatments annually from private practitioners.

Among the factors that have retarded the acceptance of topical fluoride treatments are the following: relatively high cost of the service; restrictive licensure laws which do not permit auxiliary personnel to apply the solution; individual variability and susceptibility to caries; the intangible nature of the service as compared to that of other dental services; a less than forthright position on topical fluoride therapy by public health dentists, and the many assets of community water fluoridation.

If the potential which topically applied fluorides have for caries control is to be realized, three steps must be taken:

1. The topical application of fluorides must be delegated to auxiliary personnel, and more auxiliary persons must be trained to provide the treatment.

2. The procedure of topical application of fluorides must be improved and the time involved must be reduced.

3. Organized community programs for bringing topical fluoride treatments to more children must be promoted and supported.

*U.S. Public Health Service, Washington 25, D.C.*

### Dental problems in an epidemiologic perspective

John E. Gordon. *Am.J.Pub.Health* 49:1041-1049 Aug. 1959

The chronic nature of dental disorders accounts in large measure for a delayed interest by the dental profession in epidemiological matters. Much of the responsibility for this delayed concern in the mass behavior of dental disease rests with epidemiology. As soon as epidemiologists recognized the need to incorporate chronic disease within their scope of interests, dentistry accepted its obligation and its opportunity.

The accomplishments of dental epidemiology are impressive. The investigations on mottled enamel or dental fluorosis in the western United States rank among epidemiologic classics, along with those of Panum on measles, Snow on cholera and Goldberger on pellagra.

The elementary function of epidemiology is to determine the frequency and distributions of mass disease, thus providing the information needed for organization, guidance and evaluation of public health programs. A second function is to obtain an answer to a specific question about an isolated variable or combination of variables. A third broad use of the epidemiologic method is in evaluation of agents or methods for disease control, the field trial. All three broad uses of the epidemiologic method have found application in dentistry.

Periodontal disease is the epidemiologic problem of the immediate future. Malocclusion in its mass relationships is the kind of problem that appeals to the general epidemiologist. The mouth and its adjacent structures should provide exceptional opportunity for the investigation of congenital anomalies.

There are too few dental epidemiologists. Undergraduate instruction in preventive dentistry should be built around a framework of epidemiology, as is the trend in medical education. Dentistry through graduate instruction must take responsibility for developing its own epidemiologists. A start has been made by a few schools.

In its development, dental epidemiology placed initial emphasis on problems primarily dental. In the future, dental interests should be incorporated into the general pattern of medical and epidemiologic effort toward improving the health and welfare of populations.

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### Effect of topically applied agents on enamel. IV. Experiments in vitro with iron fluoride solutions

P. Torell, T. Mörch and E. Hals. *Acta odont.scandinav.* 17:267-276 Sept. 1959

Laboratory experiments supported by theoretical considerations indicate (Torell, 1955, 1956, and Mörch, Torell and Hals, 1956) that ferric fluoride complexes can increase the acid resistance of the enamel surface. The caries prophylactic value of topical application of iron fluorides was examined more closely in the present in vitro experiments. The composition of the solutions examined was

determined on the basis of a review of the chemistry of iron fluorides supplemented with an experimental study.

The results of the experiments indicate that certain iron fluoride solutions, applied topically to the teeth, will increase the acid resistance of enamel. As the increase was found to be greater than that obtained by topical applications of sodium fluoride solutions, it seems possible that iron ions in combination with fluoride ions may be instrumental in reducing dental caries.

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### Public resistance to water fluoridation

Delmar R. Miller. *J.Florida D.Soc.* 30:2:24-27 Aug. 1959

Despite the unreserved support of the dental, medical and public health organizations, the fluoridation of public water supplies has been rejected in a high percentage of referendums.

What types of people oppose fluoridation? A study done at Northampton, Mass., has revealed that the antifluoridationists are in the older age groups, the groups without children under 12 years old, in the lower income groups, and in middle or lower class occupations. A large percentage of the opponents of fluoridation have had less than high school education. Most graduates of high school and college favor fluoridation, but a surprising number of such graduates are among the opponents. Largely, support for fluoridation comes from the white-collar occupation group and from younger groups.

Of the opponents of fluoridation studied, more than 90 per cent refused to accept as reliable the statements of qualified scientists and scientific groups who favored fluoridation. These opponents, however, seemed to give greater credence to the statements of a few scientists and professional people who oppose the measure.

The attitude of a large percentage of opponents seemed to be based on a deep suspicion of the scientific groups and individual scientists who favored fluoridation. The opponents expressed fear that the United States Public Health Service and the American Dental Association were engaged in a conspiracy with large monopoly interests in this country. The impression was widespread that professional proponents of fluoridation were to profit from the program in some devious way. To these people, the idea that dentists were to profit handsomely from fluoridation, and that fluoride manufacturers were to reap a fortune from it, seemed perfectly reasonable. The rank-and-file opponent also frequently entertains the suspicion that fluoridation is associated with subversive plots by foreign governments or their agents. This idea is subtly planted and nurtured by antifluoridationists.

The intricacies of local politics often color the fluoridation picture.

Groups working for fluoridation must realize that the program will not always be accepted because it is a good thing or because it is designed for the public welfare. A long-range program to enlighten and win over the opposition should be undertaken.

Other public health measures, such as chlorination of water and vaccination against diseases, also made slow progress initially. The great benefits to dental health which may be obtained by fluoridation make the long struggle worth the effort.

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### The caries reducing effect of naringenin and of protamine in hamsters

Bengt E. Gustafsson and Bo Krasse. *Acta odont. scandinav.* 16:355-361 Dec. 1958 [in English]

The effect of a flavonoid (naringenin) and of protamine sulfate on experimental caries in hamsters was assessed. Male Syrian hamsters were divided into three groups, one of which served as a control group. The diet of the two experimental groups was supplemented by 0.2 per cent naringenin and 0.1 per cent protamine sulfate, respectively.

The naringenin was prepared by the hydrolysis of naringin. The diet, similar to that used by Keyes (1946) and Strålfors (1956), was given in a dry state and had the following composition: skim milk powder, 30 parts; confectioner's sugar, 20 parts; whole wheat flour, 20 parts; alfalfa meal, 5 parts, and potato flour, 25 parts. Distilled water was provided from bottles with glass spouts

and, like the food, was given ad libitum. The animals were placed on this diet at an age of 20 to 25 days. The length of the experimental period was 125 days, after which the animals were sacrificed and the teeth examined under a dissecting microscope for caries.

Neither compound interfered with the general health of the animals, or with their gain in weight.

The caries incidence was higher in the control group than in the naringenin and the protamine groups. The differences between the control and the experimental groups in the number of carious teeth and the number of cavities were statistically significant. In the control group, the mean number of carious lingual, buccal and proximal surfaces was $10.0 \pm 1.2$; in the naringenin group, $5.1 \pm 0.5$, and in the protamine group, $7.6 \pm 0.7$. Naringenin had a greater reducing effect on smooth surface caries than protamine; protamine had a greater reducing effect in occlusal caries than naringenin.

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### Frequency of the incidence of malocclusion in American Negro children aged twelve to sixteen

Leonard A. Altemus. *Angle Orthodont.* 29:189-200 Oct. 1959

Although the incidence of malocclusion in the North American Caucasian population has been studied and reported many times, the incidence of malocclusion in the North American Negro population has not been recorded.

A study of the incidence of malocclusion was made, the subjects being 3,289 Negro children between the ages of 12 and 16 years, attending four junior and senior high schools in the District of Columbia. All the subjects had only permanent teeth, and no subject had received orthodontic treatment. The sample is believed to be representative of the North American Negro.

Malocclusion was assessed by two methods, the first by counting the teeth that were out of normal alignment or occlusion, and the second utilizing Angle's classification. Comparisons were made between the incidence of malocclusion in these Negro children and the results of a similar study of North American Caucasian children made in Cicero, Ill., by Massler and Frankel in 1951.

The District of Columbia study led to the following conclusions:

1. The incidence of malocclusion is high in the Negro child population. About 83 per cent of the children had malocclusion. About 4 per cent had ideal or nearly perfect occlusion, and 13 per cent had normal occlusion, that is, they had some teeth slightly malpositioned but not sufficiently so as to require orthodontic treatment.

2. The incidence of malocclusion in the Negro child population is comparable to the incidence in the Caucasian child population. As reported by Massler and Frankel, and by many other authors, the incidence of malocclusion in North American Caucasian children is about 80 per cent; only 3 per cent have ideal occlusion, and about 18 per cent have normal occlusion.

3. There were about six malocclused (malpositioned) teeth per child in the District of Columbia group and ten malocclused teeth per child in the Illinois group.

4. When malocclusion was assessed by using Angle's classification, it was noted that there were differences in the incidence of the various classes of malocclusion between Negro and Caucasian children. There were fewer Negro children with normal, Class II, Division 1, and Class III malocclusion.

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### Practical caries control measures

Ralph E. McDonald. *Month.Bul.Indiana Bd. Health* 61:7-8 June 1959

Recent surveys in this country indicate that the dental health problem is still acute. Twenty-two per cent of the two year old children and 52 per cent of the three year old children are in need of dental care. Indiana surveys reveal that school children aged 6 to 16 years average a breakdown of one new permanent tooth each year as a result of decay. Of more than 1,000 Navy recruits selected because of their excellent general physical condition, only 63 per cent were free of dental caries.

Progress is being made, however. In Philadelphia in a four year period, 61 per cent fewer

extractions of permanent teeth were required in children in the first, third and seventh grades. This significant reduction has been attributed to fluoridation of Philadelphia's water, to the dental educational program in the schools and to emphasis on prophylactic odontotomy.

Members of "4-H" clubs in Indiana who attend summer camps show a 37 per cent reduction in extracted permanent teeth as a result of an educational program stressing an adequate diet, proper oral hygiene habits and regular visits to the family dentist. Ten years ago more than 80 per cent of the first and fifth grade children in Indianapolis were in need of dental care; today the need has been reduced to about 50 per cent.

The dental profession is responsible for informing the public of the causes of caries and the preventive and corrective measures that can be instituted. No one measure will solve the problem of caries, but the dentist should utilize the following five measures when considering the dental health of an individual patient or that of a community: (1) reduction of the freely fermentable carbohydrate in the diet; (2) reduction in the number of acidogenic microorganisms in the mouth, by brushing the teeth after each meal; (3) fortifying the tooth against acid attack, by fluoridation of the community's water supply; (4) restorative dentistry, including prophylactic odontotomy, and (5) education and periodic recall of patients.

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### Abrasive action of toothbrushes with natural and synthetic bristles and of tooth pastes

Max Mooser. *Parodontol.,Zürich* 13:131-133 Oct. 1959

The abrasive action of toothbrushes with natural or synthetic bristles was studied at the Dental Institute of the University of Bern, Switzerland. Simultaneously, the abrasive property of mechanically acting tooth pastes (such as Pepsodent) and of tooth pastes containing biologically active ingredients (such as Selgin) was investigated.

The investigation was designed to determine the mechanisms of abrasion and cleaning on natural tooth structures and to evaluate their value for daily oral hygiene.

The following conclusions were made:

1. The mechanical cleaning of the teeth by using a toothbrush, whether with natural or synthetic bristles, appears to be the best procedure to prevent dental caries or to reduce the caries incidence. Adequate tooth cleaning can be obtained by using a toothbrush only. Brushing the teeth by using a tooth paste, however, reduces the time required for thorough cleaning by from 20 to 30 per cent.

2. The abrasive action of hard natural bristles and that of hard synthetic bristles appears to be almost identical whether tooth paste or water is used.

3. Synthetic bristles of medium hardness are less abrasive than hard natural or hard synthetic bristles; but the difference is not statistically significant.

4. The use of a tooth paste with a medium abrasiveness increases the combined abrasive action (toothbrush and tooth paste) significantly. The abrasive action depends on the chemical composition of the tooth paste and on the number of bristles coming in contact with the tooth surfaces and not on the form of the bristles. Harder bristles obtain a more thorough tooth cleaning, measured in time units.

5. Synthetic bristles are less capable of carrying bacteria than are natural bristles. Used in hot water, however, synthetic bristles lose their original shape and with it their abrasive property more rapidly than natural bristles.

6. Tooth pastes shorten the time required for tooth cleaning. Healthy gingival tissue permits the use of harder bristles and a more vigorous brushing. Inflamed or infected gingival tissue requires the use of soft bristles, more careful brushing and a comparatively longer time for oral hygiene at home.

7. Thorough toothbrushing with a mechanically acting toothbrush requires about 50 seconds; with a tooth paste containing biologically active ingredients, about 70 seconds, and without the use of any dentifrice, at least 90 seconds.

Each toothbrushing test was carried out vertically with about 45,000 strokes for each type of toothbrush and tooth paste investigated. Optimal

oral hygiene requires a minimum brushing time from two to three minutes.

The abrasive action of toothbrushes on the tooth structures is independent of the stiffness or type of bristles but appears to depend on the abrasive property and the chemical composition of the tooth paste used with the toothbrush.

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### Effect of a sodium lauroyl sarcosinate dentifrice: a clinical investigation

O. Backer-Dirks, G. W. Kwant and J. L. E. M. Starmans. *J.dent.Belge* 50:163-175 May-June 1959

The effect of a potential inhibitor of acid fermentation of carbohydrates in the bacterial plaques on tooth surfaces primarily depends on the maintenance of a sufficient concentration in the plaques. Sodium lauroyl sarcosinate, by virtue of its adsorption to proteins and presumably to plaque mucin, is one of the few chemical agents which seems to meet this requirement and, therefore, requires an investigation of its effectiveness and applicability.

The effect of a tooth paste containing 2 per cent sodium lauroyl sarcosinate was studied in 174 boys between 10 and 13 years, who attended a Belgian boarding school. The control group used a tooth paste containing 2 per cent sodium lauryl sulfate. The boys were arranged carefully in matched pairs, and consequently the control and the experimental groups were completely comparable.

Proximal carious cavities were evaluated from standardized duplicate roentgenograms, whereas occlusal cavities were diagnosed by direct observation. Both caries evaluations were conducted in duplicate, permitting a minimum of standard errors of observation, varying between 0.3 and 1 per cent.

After 20 months of use of the tooth pastes, the incidence of proximal carious lesions in both groups was approximately equal in number as well as in distribution.

The number of new carious lesions in the occlusal surfaces was slightly less in the experimental group than in the control group. The difference, however, was insignificant and within the limit of a possible standard error of observation.

The magnitude of the demonstrated caries incidence (about 80 per cent of the initial score) appears to prove that neither sodium lauroyl sarcosinate nor sodium lauryl sulfate has an effect of any practical importance on the prevention or reduction of caries.

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### Health snacks at school

Mary Cantrell. *J.School Health* 29:386-387 Dec. 1959

After the author observed that school children were eating such snacks as cakes, cookies and jelly sandwiches, a plan was formulated to develop better nutritional habits at snack time.

An experiment was conducted with a kindergarten class. A meeting was held with the parents to explain the importance of children having "health snacks" rather than sweets. A health snack does not curb the child's appetite for his next meal, and it helps keep his consumption of sweets at a minimum, thereby helping to prevent dental caries.

Most of the kindergarten children have milk in the middle of the morning. Each day a health snack is served by a pupil, each child having his turn to bring the "treat." These treats consist of carrot or celery strips, apple or orange wedges, dried prunes, raisins, dried apricots or peaches, or fresh fruits in season.

When the children are finished with their snacks, they are urged to get a drink of water, "swish and swallow," thereby removing most of the food from their mouths. Once these habits become routine, the children are less apt to bring sweets to school for snacks. This is a simple but effective way to begin teaching the principles of good nutrition. It is a good program for the health chairman of any parent-teacher association to promote.

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Organization

## Professional Provident Fund

A. R. McCay and R. N. Peverill.
*Austral.D.J.* 4:299-303 Oct. 1959

In Australia, although a federal law permitting the self-employed person to provide for his old age has been in operation for some time, the law's advantages have been utilized only in New South Wales and Queensland. Recently, an amendment to the Victorian Stamps Act cleared the path for the introduction of the Professional Provident Fund inaugurated and sponsored by the Victorian branch of the Australian Dental Association.

One section of the Income Tax Act permits, in certain circumstances, the income of an approved provident or superannuation fund for the benefit of self-employed persons to be exempt from income tax. Another section of the Income Tax Act allows a contributor $672 [all sums mentioned in the abstract have been converted from Australian pounds to dollars at the rate of £1 = $2.24]. Legislation is before Federal Parliament to increase this limit from $672 to $896. A limit to the value of the members' entitlement is fixed at the moment at $56,000. If a contributor aged 25 years makes a regular annual payment of $448 per year for 40 years, that is, until he is 65 years old, his entitlement, based on a yield of 5.5 per cent, will be about $56,000, even though his actual contributions would have been only $17,920.

The limits of contributions to the Professional Provident Fund are fixed at present at $672 per year up to the age of 45 years, $1,120 per year between ages 45 and 55 years, $2,240 per year for those over the age of 55 years. If a member is contributing to more than one fund, the above annual amounts are the total amounts he may contribute.

The fund comprises members' contributions and income earned on investment of such contributions plus capital appreciations. The fund is completely under the control of the trustees. All five trustees are members of the Victorian Branch of the Australian Dental Association and act in an entirely honorary capacity. The investment policy of the fund is determined by the trustees but will be effected by the reputable Equity Trustee Company of Melbourne. Investments are chosen from a wide range of securities.

Any self-employed person whose net income from personal exertion is more than half his total income and who in any year derives from his business or practice more than half his net income from personal exertion in that year is eligible for membership. This person may be in business or professional practice, either alone or as a partner or as an assistant.

The taxation concessions are extremely valuable. The proposed increase from $672 to $896 as an annual concessional deduction reduces the tax on a $6,720 annual income considerably, with the tremendous advantage that the income from the invested sum is tax-free.

Benefits are payable under the following conditions: (1) if a male member has attained the age of 65 years; (2) if a male member has attained the age of 60 years and has contributed to the fund for at least 10 years; (3) if a female member of the fund has attained the age of 60 years; (4) if a member has ceased to be self-employed and has retired from business or professional practice by reason of serious ill-health, bodily accident or physical disability.

In the event of death at any time before the member is paid out, the member's benefit is payable to his legal personal representative. Loans may be made to a member up to 75 per cent of his interest in the fund, under certain conditions, at a rate of interest determined by the trustees. The deed also provides that the trustees may make arrangements, at the member's request, for life insurance.

The Professional Provident Fund is a mutual scheme. There are no directors' fees and no shareholders to be satisfied in the way of dividends. The fund belongs to the members only. Similar programs are in operation but they are run as commercial enterprises and as such they suffer by comparison because of their operational costs. The value of the Professional Provident Fund is that the members' investment lies in the economy of the country and keeps pace with inflation (or

deflation). The investments are made over such a wide range that any market fluctuations are cushioned.

The Professional Provident Fund is an opportunity for the professional man to provide adequately for his old age or for his family in case of premature death. Every professional man should faithfully devote a percentage of his annual income to that purpose.

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## Dentistry around the world

### The early years of the European Orthodontic Society

Harold Chapman. *Am.J.Orthodont.* 45:837-846 Nov. 1959

The European Orthodontia Society was founded September 27, 1907, in Berlin. The charter members were E. D. Barrows, Miss Jane Bunker, J. J. Giusti, J. Grünberg, G. A. Kennedy, W. G. Law, A. F. Londström, M. Pfluger, L. A. Watling, and F. Zeliska. Barrows, Bunker, Kennedy and Law were Americans. Of the ten charter members, five were closely associated with Edward Hartley Angle and four had taken his course. Lundström, a Swede, probably was the first orthodontic specialist in Europe.

For the first five meetings, all but four of the officers were Americans practicing in Germany. Meetings were to be held annually, but in the first 50 years only 33 annual meetings were held. Because of the two world wars, no meetings were held from 1915 to 1921 and from 1940 to 1946, inclusive. In addition, no meetings were held in 1911, 1931, 1936 and 1950. Three meetings were held in conjunction with other societies. In 1914 the name of the organization was changed to the European Orthodontological Society, and in 1935 to the European Orthodontic Society.

By 1914 the society had 45 ordinary and 3 honorary members. Today there are nearly 400 members from all over the world.

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### Dentists and ancillaries

*Lancet* No. 7110:1016-1017 Dec. 5, 1959

The general secretary of the General Dental Practitioners Association, in a letter in this issue, has implied that the failure of the dental profession in England to attract recruits is caused mainly by conditions of general practice under the National Health Service. Although there is much dissatisfaction among dental practitioners, it is doubtful whether this dissatisfaction, to a young man or woman considering a career, is crucial in deciding against a career in dentistry. One effect of the National Health Service has been virtually to guarantee all young dentists a choice of well-paid assistantships in general dental practice in almost any part of the British Isles—often with a house or apartment, and sometimes with the use of a car, as added inducement. This is known to aspirants. If they still are not drawn to the profession, for many of them the apparently unattractive nature of the work of a dentist is unlikely to be outweighed by the advantages of income, status or security which it could offer.

When the scientifically minded or dextrous student has the choice of openings which an expanding economy offers the ambitious rising generation today, it is less probable than formerly that he will chose dentistry, which, unless he is specially interested, may well appear relatively restricted, unadventurous and without glamor. The community should expect continuing prosperity to lead to the dental profession's being so reduced in numbers as to be unable to fulfill its role unaided.

The situation could be transformed, however, if there were enough auxiliaries to relieve dentists of the simpler operations of dentistry. Trained only to perform specified operations, and working under the direct personal supervision of a dentist, these auxiliaries should neither threaten the position of the dental profession nor lower the standards of treatment of the public.

The Dentists Act authorizes an experiment in the training and employment of dental auxiliaries. The first student will not begin her training before October 1960; it is doubtful whether such a delay in starting the program is justified.

*7 Adam Street, Adelphi, London W.C.2, England*

General

## A new type of operatory

Leonard E. Quitt. *J.Connecticut D.A.* 33:15-21 Oct. 1959

Today's dental operatory (Fig. 1) contains much of the latest and best equipment, but the tubing, wires, dials and boxes create an environment which is a cross between a machine shop and the back side of a telephone switchboard. The author has designed a new type of operatory (Fig. 2) which creates a relaxed atmosphere.

The dental chair has been designed to elevate the patient's legs in order to produce greater relaxation. The bracket table arm and bracket table have been eliminated. Since the air and water syringes are used both by the dental assistant and the dentist, separate sets of syringes have been placed on either side of the patient. The motor, the motor arm, belts and the handpiece have been eliminated from the unit so that there is nothing over the patient's head except a light.

The cuspidor has been retained. The high-volume evacuator has been retained, but the box has been hidden and the motor quieted. The pneumatic condenser has been repositioned in a mobile dental unit (Fig. 3). The mobile cabinet has two doors and a washable top extending to the left to provide a work surface. Air lines, water lines and electricity are fed into the rear of the cabinet, which houses the following equipment: an air drive unit equipped with both straight and contra-angle handpieces, an air and water spray (the speeds of the handpieces are controlled by a finger spring rather than by a foot rheostat); an ultra high-speed rotor equipped with an air and water spray and a handpiece light which derives from a laryngoscope; a warm air syringe; a warm water syringe, and an automatic mallet for con-

*Figure 1* (*Left*) *A modern dental operatory. On the left, anesthesia machine* (*covered with towel*) *on mobile base. On the left arm of the chair, an armboard to facilitate the administration of intravenous agents. Above the cupsidor, a high-volume oral evacuator. At the rear of the motor bracket, a pneumatic condenser and motor. On the bracket table arm, an ultra high-speed air rotor*

*Figure 2* (*Right*) *The new operatory. At the left, a screen masking the anesthesia machine. Below the head of the x-ray unit, the tubing and controls of a high-volume oral evacuator. The chair has a cushioned insert to elevate the patient's legs*

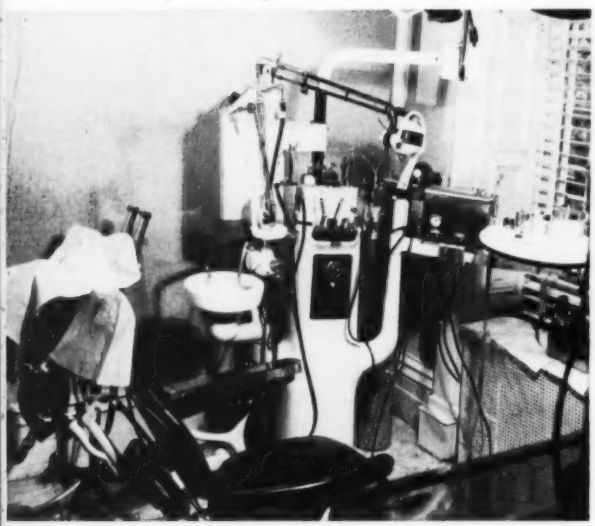


*Figure 3 A mobile dental unit. On the left door, switches and controls. On the work surface, from left to right, an air-driven, finger-controlled straight handpiece, a contra-angle handpiece, ultra high-speed air rotor handpiece, warm air syringe, pneumatic condenser handpiece, and warm water syringe*

densation of gold foil or alloy filings. The handpieces are racked to the right of the work surface and toward the front of the cabinet. All instruments are controlled from a switch panel. The air rotor foot control hangs below the overhanging work surface. The cabinet stands at the back wall of the operatory and is pulled forward on its casters after the patient is seated in the chair. The handpieces and syringes are behind the patient's head and to the right, and may be used without having to drag tubing over the patient's body. There is sufficient work surface so that all instruments and materials may be prearranged at the operator's fingertips.

Thus the entire dental unit shown in Figure 1 has been eliminated, and a cuspidor equipped with a saliva ejector and drinking cup stand has been substituted. Air and water syringes are installed on the cuspidor for the dental assistant's use. A light on the front wall and a supplementary light at the rear of the chair (not illustrated) provide illumination. The high-volume oral evacuator is mounted in a laboratory which is behind the left wall of the operatory. The two suction tubes and the controls are brought through the wall. Drainage is directed into the laboratory sink. A box insulated against sound surrounds the evacuator motor, which is practically inaudible. The apparatus for anesthesia and analgesia has been removed from its mobile base, wall-mounted and boxed (Fig. 2), thereby creating more room to the left of the chair. A mobile instrument cabinet (not illustrated) can be pulled closer to the chair to provide a supplementary work surface.

This operatory has been in use for six months. The response of patients has been favorable and in some instances, enthusiastic.

*205 East Sixty-first Street, New York, N.Y.*

## Risk of fire and explosion in the dental office

F. Duyvenesz. *Tschr.tandheelk.* 65:113-124 Feb. 1959

Disregard of the elementary safety and precautionary measures by dentists, dental assistants or patients may lead to serious accidents such as fire or explosion.

Safety regulations should be posted in every room of the dental office, clearly visible to the dentist's personnel and his patients.

All inflammable anesthetic preparations, which usually contain oxygen, are essentially explosive. Almost as dangerous are chemical disinfectants such as benzene, alcohol and their derivatives.

Smoking in the dental office should be prohibited. Static electricity which may ignite explosive compounds is a fire and explosion hazard which exists in many operating rooms. Clothing made of silk, wool, nylon or other synthetic textures, exhibit a maximum sparking potential. The dentist and his office personnel should wear clothing made of linen and shoes with rubber soles.

The anesthesia apparatus as well as all parts of the electric equipment should be properly insulated and periodically checked. Defects in electric wiring may cause fire and explosion in the operating room.

To prevent these hazards, the containers of inflammable anesthetics should be painted in different colors such as nitrous oxide in light blue; cyclopropane in orange; ethylene in red, oxygen in green, and so forth.

Occasionally the physical condition of a patient or the requirements of a specific dental or

oral surgical procedure may offer temptation to violate some of the safety regulations. The fact that 36 explosions occurred in dental offices in England between 1947 and 1954 illustrates the possible result of such violations. The report of the British Ministry of Health on explosions in the operating theatre (1956) demonstrates that had all the precautionary measures been followed, these accidents would not have occurred.

*Jutfaseweg 1, Utrecht, The Netherlands*

### An appliance which holds radioactive needles for treating oral malignancies

Henry K. Yaggi. *J.Pros.Den.* 9:1066-1068 Nov.-Dec. 1959

A simple prosthetic appliance can overcome the difficulties usually encountered by radiologists in placing radioactive needles in the jaws of patients being treated for oral malignancies.

An alginate impression of the affected region is made, and a cast is poured. The radiologist outlines the involved region on the cast and indicates the desired positions of the needles. A layer of liquid latex is applied directly to the cast with a small camel's-hair brush. No separating medium is needed. The first layer of latex is allowed to dry, and the procedure is repeated until the latex has been built up to within 1.5 mm. of the desired bulk. The needles are placed in their designated positions, and sufficient latex is added to cover them and hold them in position.

When the latex is cured, a roentgenogram of the appliance on the cast is made to be sure that the needles are retained in their correct positions. Any necessary changes or corrections are made before the appliance is removed from the cast and trimmed to its predetermined outline.

When the appliance is inserted in the mouth, the patient is instructed about its care and its insertion and removal.

This simple appliance permits the use of radioactive needles in regions where surgical implantation is either impossible or unsatisfactory. The appliance permits a prolonged exposure to needles of low intensity, and provides an accurate means for controlling the amount of radiation.

*9 Butler Avenue, Columbus 8, Ohio*

### Author's code of honor

T. Oliaro. *Panminerva Med.* 1:153-155 Sept. 1959

To write a scientific article, especially in the fields of medicine or dentistry, may seem easier than it is in fact, because it is not a work of fiction in which the author's imagination can be employed.

In a scientific article, the author's talent for invention is positively harmful; only data obtained in experiments, investigations or statistics are of basic importance and cannot be modified by the desire to stress unusual facts.

This does not mean, however, that scientific articles should be free from originality; on the contrary, originality is the only quality that can give national and international value to a scientific work.

All creative work, whether it be scientific, artistic, literary or didactic, is placed under the protection of international laws on literary property. For scientific works, however, there exist particular facilities and practices which permit quotation and picture reproduction because the main purpose is scientific information.

Certain articles of research investigations and data evaluations are frequently written at the request of editors or publishers of newspapers or of managers of industrial companies. The purpose of the first is journalistic, and of the second more or less commercial. Although for this type of scientific writing a fee comparable to that paid to authors of books is usual, the dental and medical professions cannot permit research investigations and clinical experiences to be utilized for purely economic and commercial purposes such as promoting the sale of certain pharmaceutical products.

For any new study or any further research it is indispensable that the authors have a profound knowledge of the scientific data published in the past to avoid useless errors and duplications. To know what has been reported and achieved in the field selected from the past to the present time, to know the procedures (investigatory and experimental) which were undertaken to demonstrate success and failure, are the keenest aim of researchers. This aim is reached by including the pertinent reference material, which is one of the fundamental points of the author's code of honor.

Because it is understood that the reference material does not recognize language barriers, the author should never quote or refer to an article he has not read. The reference material should include the name of the author, the title of the article, the title of the publication, volume and page numbers, and year of publication. The article's title should be quoted in the original language and the title of the periodical should neither be translated nor abbreviated.

The author's code of honor discriminates also against writers who offer the same or a slightly altered article to different periodicals, even if those are published in different countries. A scientific article should be published only by a single journal. The only possible exception is the appearance of such an article in one of the abstract reviews which are intended to facilitate the spread of scientific research on a nationwide or worldwide basis.

The scientific article should be written in faultless language; even in a purely technical work unnecessary specific terminology should be avoided. The author, as well as the editor of the periodical, should take care that the carefully checked, typewritten manuscript should be sent to the printer without illegible corrections and that the illustrations are perfect to permit an excellent reproduction.

The authors should bear in mind that they will not be judged merely on the basis of the quantity of articles published, but by their quality. The following ten points of the author's code of honor are worthy of general consideration:

1. The original scientific article must be the product of thought or investigation of the author or a group.

2. Doubtful or invented data should not be included in a scientific work, at least not without criticism.

3. Accuracy in documentation and in compilation of reference material is important.

4. Full credit should be given to all authors quoted, and, if possible, to the educational and research institutes where the scientific investigation had taken place.

5. Scientific writing should be executed with precision and discretion, and never for pecuniary gain of any kind.

6. Scientific articles, previously published, should not be repeated, neither by the author of the original nor by others, and modifications such as a change in title or an alteration in text, are prohibited.

7. Data obtained should never be altered to serve as proof for the author's contentions and conclusions.

8. Previously published articles on the same or a similar topic may be quoted but never copied.

9. The senior author should not take credit for the work done by his co-workers.

10. No scientific author is entitled to take credit for the results of experiments made by others.

Like the tablets of Moses, containing the Ten Commandments, the author's code of honor teaches us to love our neighbors as much as ourselves, by attaching rules to professional ethics, and by informing members of the profession about advances in their fields. This should be done without selfish aims to provide for a continuation of the development of the profession which then will grow and grow from civilization to civilization.

*Corso Cairoli 12, Turin, Italy*

### Bands on bovine teeth

H. C. Pollock. *Am.J.Orthodont.* 45:694-696 Sept. 1959

A recent front-page story tells of the success of a dentist, Ward C. Newcomb, of Chappell, Neb., in crowning the abraded lower front teeth of valuable beef cattle in eastern Colorado. A Colorado rancher has asserted that putting metal crowns on the eight front teeth of cows will add between three and eight years to the lives of cattle, and will pay off in extra calves produced during those years.

Correspondence with Dr. Newcomb reveals that the story is true and logical. He reports there are large amounts of silicate and sand on the wind-swept, dry prairies where he made his experiment, and that this environment tends to abrade the enamel and dentin of the occlusal surfaces of the teeth of any herbivorous animal at an early age. Dr. Newcomb decided to replace this abraded enamel with hard stainless steel crowns

and attempt to prolong the life and usefulness of fine cattle for a few years. That goal has been achieved.

Dr. Newcomb now is demonstrating his technic before various organizations of veterinarians. The bands used are made of a special hard stainless steel, and are crimped and cemented onto the teeth with hard cement which retains the bands in place for several years. The experiment is being watched with interest by many dentists.

*3207 Washington Boulevard, St. Louis 3, Mo.*

### Charles V and Spanish pronunciation

J. Perelló. *An.med.* 45:105-114
April 1959

The pronunciation of a language varies with time and place. In the course of its history, it undergoes many changes, some of which take place slowly, others rapidly. Differences between the spelling of a word and its pronunciation reflect these changes, because the written language usually is more conservative than the spoken language, so that old spellings often persist in spite of changes in pronunciation. Many difficulties are encountered in attempting to determine the reasons for these changes. Certain phonetic laws, formulated by Grammont, are general enough to apply to all languages, but sometimes changes, instead of developing slowly, occur abruptly as the result of a deliberate imitation of an innovation or peculiarity introduced by someone of prestige or authority.

A striking example of this is the change that took place in the Spanish pronunciation "c" and "z," difficulties with which lead to the form of dyslalia known as sigmatism. Grammars and other books dealing with language, written by Spaniards and by scholars of other nationalities, show that in Spanish, up to the sixteenth century, neither of these letters was pronounced in the later Castilian manner as "th." The first reference to the "th" pronunciation appeared in the *Reglas Grammaticas* (Rules of Grammar) of Antonio del Corro (1560); others followed, until by the beginning of the seventeenth century the original sound of the letters had been forgotten and the "th" sound was firmly established for "ce," "ci," and "z." Thus it appears that in the first half of the sixteenth century, a fairly rapid change took place in the pronunciation of "c" and "z," which finally gave them the fricative sound peculiar to Castilian Spanish. This interdental sigmatism, which is regarded as a defect in articulation in all other languages, invariably attracts the attention of foreigners when they first hear Spaniards talking.

What caused this phonetic change, which appeared first at the Court, then the most powerful in the world? Descriptions and likenesses of the then ruling emperor, Charles V, provide material on which to base a theory explaining the change. Charles V was born at Ghent in 1500; he was educated in Flanders, and knew no Spanish when at the age of 17 he came to Spain for the first time. In describing the Emperor, Badoero, an ambassador from Venice, said: "He has . . . a long, wide lower jaw which keeps him from closing his teeth and prevents one from hearing clearly the ends of the words he pronounces." The extraordinary character of this malformation of the jaw or prognathism can readily be seen in the various likenesses of the Emperor, notwithstanding the fact that the Court artists probably tried to obscure it. Thus we find that Charles V, suffering from prognathism so extreme that "he could not close his mouth" and that "what he said could not be clearly heard," began, at the request of his Spanish subjects, to learn a new language when he was 17 years old. Now, in prognathism, the tongue is carried forward and obliged to advance its point of articulation; at rest, on the other hand, it assumes an interdental position and sibilant sounds become interdental, that is, lisping.

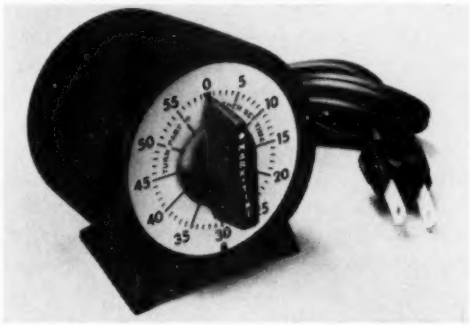
Imitation of the Emperor's defective pronunciation, first practiced by the courtiers surrounding him, soon spread beyond the confines of the Court and before long the custom of pronouncing "c" and "z" as "th" was fixed. Although this mispronunciation has been said to have begun with Charles's son, Philip II, the facts revealed by history seem to show that it should really be attributed to his father's prognathism (an inherited defect). The fault to which it gave rise was no doubt unconsciously copied by Philip II.

*Via Layetana 31, Barcelona, Spain*

## New equipment

*The information reported here is obtained from manufacturers.* Dental Abstracts *does not assume responsibility for the accuracy of the information. The interested reader may direct his inquiry to the manufacturer.*

A "Mark Time" switch, termed the "switch with a memory," is designed to turn off dental equipment, such as sterilizers, after a period of time selected by the operator. The electrical cord from the device to be time-controlled is plugged into the outlet of the Mark-Time switch. The switch has a black, acid-resistant case with large numerals on the dial face. The switch is rated at 10 amperes, 125 volts A.C. *M. H. Rhodes, Inc., Hartford, Conn.*

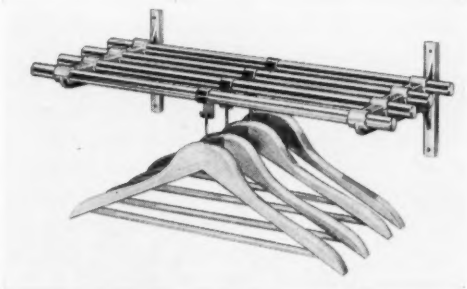



"Speedy" separating disks are designed for the preparation of teeth in the mouth. The synthetic resin-base disks are available in diameters of ¾ and ⅞ inch, with abrasive on one or both sides. According to the manufacturer, the bite and resistance of the disks make them suitable for working on even the hardest metals. *Union Broach Co., Inc., 80-02 Fifty-first Ave., Elmhurst 73, Long Island, N.Y.*

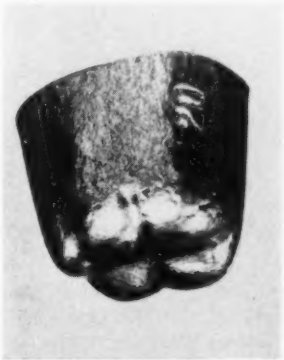
The "disontegrator System Forty" cleaner is an ultrasonic cleaner with a capacity of one-half gallon. The manufacturer claims the cleaner will disintegrate more than 50 classes of soils and contaminants in seconds from such products as surgical instruments and dentures. The cleaner has a 40-watt generator with an output of 90,000 cycles per second. The cleaner consumes no more current than an ordinary light bulb. *Ultrasonic Industries, Inc., Albertson, Long Island, N.Y.*

Sears' dental air compressor is designed specifically for dental application. The automatic ½-horsepower unit is mounted on a 10-gallon air storage tank. Delivering 2.3 c.f.m. at 40 psi, the compressor can operate two air-driven handpieces simultaneously. The motor has an overload protector. *Sears, Roebuck & Co., S. State and Van Buren, Chicago, Ill.*

A compact coat and hat rack is said to offer advantages for use in shallow, confined areas. Coat hangers hang parallel rather than at a right-angle to the supporting wall. The assembly, loaded, projects 11 inches from the wall. The standard hangers have "hookless" hooks that slip into fixed receptacles attached to the hat shelf. Hat shelves are formed of parallel aluminum tubes, held in cast aluminum wall brackets. *Vogel Peterson Co., Elmhurst, Ill.*



New "Tin Crown" forms are described as noncorrosive, nonirritating, as soft as 24 carat gold, and with less galvanic action than aluminum forms. Tin Crown forms are said to provide a natural chewing surface. The soft tin is easy to trim and contour. The forms are available in a keyed compartment box of 92 assorted upper and lower bicuspids and molars. *Surgident, Ltd., 3871 Grand View Blvd., Los Angeles 66, Calif.*



## Doctoral and Masters' dissertations

*In this column each month are listed recent Doctoral and Masters' dissertations of dental interest, accepted by the dental schools or graduate schools in partial fulfillment for advanced degrees. Copies of many of these theses are available from the schools through interlibrary loan.*

Use of drugs containing phenol-thymol compounds in root canal treatment (Die Benutzung von Phenol-Thymol enthaltenden Mitteln bei der Wurzelbehandlung). *Heinz Kleffmann. 1959.* DR.MED.DENT. *University of Bonn, Germany.*

Behavior of the acrylic materials Plexi, Hesacryl and Palavit under different thermal conditions especially under the influence of heat produced by polishing methods (Das Verhalten der Kunststoffe Plexi, Hesacryl und Palavit unter verschiedenen thermischen Bedingungen, besonders unter Beeinflussung von Wärme erzeugt bei Politur-Methoden). *Gerhard Otto. 1959.* DR. MED.DENT. *University of Bonn, Germany.*

Investigations of the retentivity of various dental filling materials (Untersuchungen über die Haftintensität verschiedener zahnärztlicher Füllungsmaterialien). *Erika Hensel. 1959.* DR.MED.DENT. *University of Bonn, Germany.*

Comparison between hydroxylphoresis and iontophoresis (Vergleich der Hydroxyl- und Jodionophorese). *Peter Uyma. 1959.* DR.MED.DENT. *University of Bonn, Germany.*

Utilization of the vacuum in dental casting technics (Die Verwendung des Vakuums in der zahnärztlichen Gusstechnik). *Klaus Siegbert Albrecht. 1959.* DR.MED.DENT. *University of Bonn, Germany.*

Spontaneous fractures (Fratture patologiche). *M. Cervia. 1959.* DR.MED.DENT. *University of Milan, Italy.*

Possibility and limitation of the use of teeth with nonvital pulps as abutments for partial dentures (Possibilità e limiti del dente devitalizzato nella protesi parziale). *F. Legnazzi. 1959.* DR.MED. DENT. *University of Milan, Italy.*

Possibilities and limitations of enlarging the palate (Possibilità e limiti dell' allargamento del palato). *S. Bacillieri. 1959.* DR.MED.DENT. *University of Milan, Italy.*

Changes in blood count after tooth extractions or surgical interventions (Il comportamento della formula ematica dopo interventi stomatologici). *A. Cattaneo. 1959.* DR.MED.DENT. *University of Milan, Italy.*

Indirect retention in dental prosthetics (La ritenzione indiretta in protesi dentale). *C. Campisi. 1959.* DR.MED.DENT. *University of Milan, Italy.*

Pathologic manifestations of the tongue (Le manifestazioni patologiche della lingua). *F. Galluzzo. 1959.* DR.MED.DENT. *University of Milan, Italy.*

The effects of the physical consistency of food on the growth and development of the skull and mandible of the rat: a cephalometric study. *J. E. C. McGowan. 1957.* M.S.D. *University of Toronto.*

A microscopic study of primary gingival pathosis in children. *W. H. McIntosh. 1957.* M.S.D. *University of Toronto.*

A cephalometric study of the rest position of the mandible in adult humans. *T. M. Udani. 1957.* M.S.D. *University of Toronto.*

A cephalometric x-ray study of anterior open bite and its treatment. *Robert Andrew Anderson. 1959.* M.S. *University of Illinois.*

Growth of the face with bilateral cleft lip from one month to eight years of age. *Samuel Berkowitz. 1959.* M.S. *University of Illinois.*

Tooth development in cattle. *William Anthony Barry Brown. 1959.* M.S. *University of Illinois.*

Marginal penetration of dental restorations as studied by dyes and radioactive isotopes. *Robert Ernest Going. 1959.* M.S. *University of Illinois.*

Formation of periodontal tissues around the developing roots of subcutaneously transplanted hamster molars. *Richard Leigh Hoffman. 1959.* M.S. *University of Illinois.*

Posture of the mandible during phonation of the vowel U. *Kleve Carlyle Johnson. 1959.* M.S. *University of Illinois.*

Variation in size and form of the cranial base. *Allan A. Ash. 1959.* M.S. *University of Michigan.*

An electromyographic analysis of the temporalis muscles and certain facial muscles in thumb and finger sucking patients. *Claude Baril. 1959.* M.S. *University of Michigan.*

A study of the present-day silicates as to physical properties and manipulative technique. *L. Benson Bristol. 1959.* M.S. *University of Michigan.*

A cephalometric study of effective mandibular length changes seen in patients treated with functional jaw orthopedic appliances. *Robert W. Browne. 1959.* M.S. *University of Michigan.*

A study of facial ossification centers of normal and cleft lip and palate embryos. *Robert Kiernan Devine. 1958.* M.S. *University of Michigan.*

A growth study in ramus height. *William G. Schneider. 1959.* M.S. *University of North Carolina.*

An electromyographic study of face height in complete artificial denture subjects. *James L. Jensen. 1959.* M.S.D. *Northwestern University.*

A comparison of the rest vertical dimension of the face as determined clinically and electromyographically. *Mark Roberts. 1959.* M.S.D. *Northwestern University.*

The effect of silicate amalgam and cast gold on the gingiva. *George Russell App. 1959.* M.S. *Ohio State University.*

Displacement of the soft tissues and its relation to denture stability. *Felipe Cueva. 1959.* M.S. *Ohio State University.*

Calculus formation on rat molars when fed a diet softened with human saliva. *Edward F. Miller. 1958.* M.S. *Ohio State University.*

In vitro culture of mucosa. *C. Kendall Porter. 1959.* M.S. *Ohio State University.*

The influence of gelatin film over extraction wounds in dogs. *Donald L. Wilson. 1959.* M.S. *Ohio State University.*

Tissue response to tooth movement in normal and rachitic rats. *Paul Benjamin Johnston. 1959.* M.S. *University of Pittsburgh.*

The study of the migration of the first and third molars after the removal of the second molar in rachitic and nonrachitic rats. *Joseph Henry Seipp, Jr. 1959.* M.S. *University of Pittsburgh.*

Measurement of blood loss during oral surgical operations. *Harry Nicholas Pasqual. 1959.* M.S. *University of Pittsburgh.*

The pathological reactions and metabolism of diphenylhydantoin in the ferret. *Paul N. Abadom. 1959.* M.S. *University of Rochester.*

A study of two-dimensional changes from a lateral aspect of erupting second and third molars. *David G. Hickey. 1958.* M.S. *University of Washington.*

A serial cephalometric roentgenographic study of the variation in the craniofacial complex. *Robert C. Ticknor. 1958.* M.S. *University of Washington.*

A cephalometric roentgenographic investigation of changes occurring in certain teeth as a result of orthodontic therapy. *Rex H. Wallman. 1958.* M.S. *University of Washington.*

A study of facial growth utilizing elements of the cranial base for registration. *Toyn O. Nelson. 1959.* M.S. *University of Washington.*

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